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A Study of the Cost of Producing Tobacco in Kentucky

A THESIS

Presented to the
Faculty of the Graduate School of Cornell University
in Partial Fulfillment of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

by

WILLIAM DURRETT NICHOLLS

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A STUDY OF THE COST OF PRODUCING TOBACCO IN KENTUCKY

BULLETIN NO. 275

Lexington, Ky.
October, 1926.

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BULLETIN NO. 275

A Study of the Cost of Producing Tobacco in Kentucky

By W. D. NICHOLLS*

Part I. Regions and Methods of Study.

INTRODUCTION

A knowledge of costs is a necessity for the profitable production of a commodity. Such knowledge is a help in working out ways and means for producing at a lower cost. It is also worth while for any producer to know how his costs compare with those of other producers in his own section and in more remote regions.

In the spring of 1919 the Department of Farm Economics of the Kentucky Agricultural Experiment Station in cooperation with the Bureau of Agricultural Economics of the Federal Department of Agriculture began a study to secure data on the cost of producing farm products. Tobacco being the most important money crop of the state was the first crop studied. Bulletin 229 of the Kentucky Agricultural Experiment Station** gives a preliminary report of the first year of the study.

The data here presented show the cost of producing Burley tobacco during the period, 1919 to 1924, inclusive, and Dark

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**The Cost of Producing Tobacco in Kentucky, by W. D. Nicholls and F. W. Peck. Bulletin 229, Kentucky Agricultural Experiment Station, Lexington, Kentucky, October, 1920. (Out of print.)

Fire-Cured tobacco during the period from 1919 to 1923, inclusive. The study included 302 crops in the Burley District, totaling 2331.5 acres, with the total production of 2,477,541 pounds, and 274 crops in the Dark Fire-Cured Tobacco District, totaling 2591.2 acres and 2,045,008 pounds. Of the total number of crops of Burley tobacco, 287 were for the four-year period, 1919 to 1922, inclusive, 8 for 1923 and 7 for 1924. The following averages are for the first named period.

According to the 1920 census, tobacco was produced on nearly 143,000 of the 270,626 farms of Kentucky. The estimated value of the 1924 tobacco crop in Kentucky was approximately 72 million dollars. The crop constituted 35 percent of the total value of all crops and occupied 8.3 percent of the cropped area. (See Table 1.) The state produces about one-third of the total amount of tobacco grown in the United States and nearly 12 percent of the total world crop of 2.8 billion pounds. The other important producing countries, in the order of the quantity produced, are British India, Russia, Hungary, the Dutch East Indies, Japan, Germany, Philippine Islands, Brazil and Cuba. There has been a steady and marked increase in the importance of the tobacco crop in Kentucky for the past 100 years.

TABLE 1.—Acreage and Value of Tobacco Crop as Compared With All Crops in Kentucky.

(Five-year average, 1920-1924)*

Crop	Acres	Per Cent of Total Acreage	Value	Per Cent of Total Value
All crops	6,119,800	100	$207,199,800	100
Tobacco	510,200	8.3	72,539,400	35.0
Corn	3,244,400	53.0	70,347,000	33.9
Wheat	585,200	9.6	8,415,200	4.1
Hay	1,087,800	17.8	23,861,800	11.5

*United States Department of Agriculture Yearbook, 1919, 1920, 1921 and 1922. Weather, Crops and Markets, Vol. 2, No. 26, December 23, 1922, and Vol. 4, No. 26, December 29, 1923. Crops and Markets, Vol. 1, Supp. 12, December, 1924.

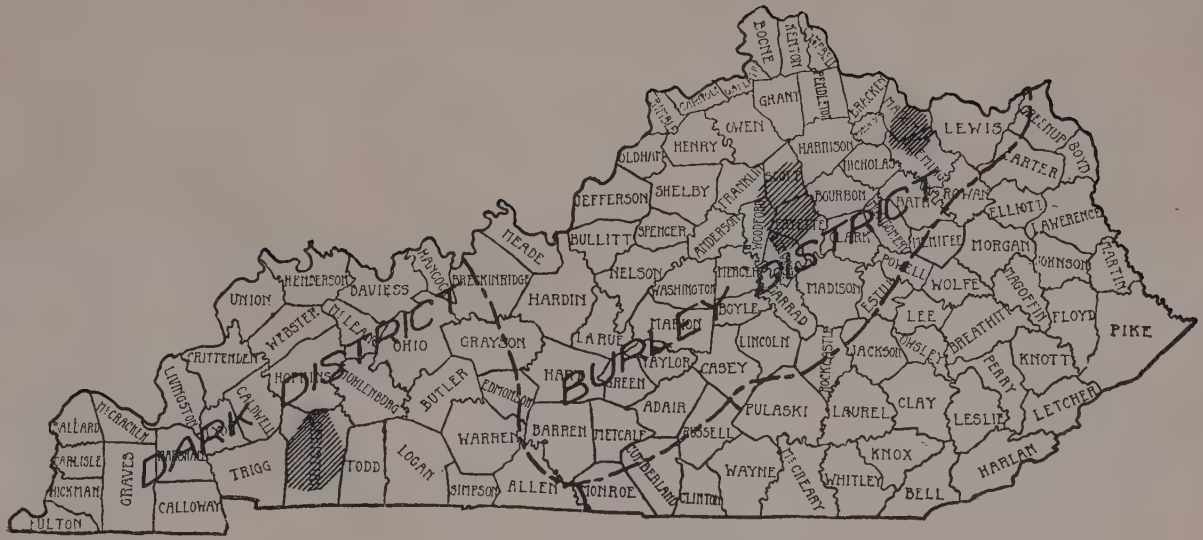

Fig. 1. Location of the territory in which the study was made.

LOCATION OF THE AREAS STUDIED

The tobacco-growing area of Kentucky may be divided into two principial districts. (Figure 1.) One of these is the central district producing Burley tobacco, an air-cured type used chiefly in the production of plug-cut smoking tobaccos, and in the manufacture of cigarettes and chewing tobacco. The other district occupies the southwestern and western part of the state, and produces the so-called Dark tobacco, the greater part of which is fire-cured and is sold chiefly to foreign buyers for export to England, Germany, France, Italy and Spain. In a part of the area of the Dark Tobacco District (the so-called Green River and One-sucker Districts) the crop is air cured; otherwise the methods of cultivation and handling and the varieties grown are similar to those of the remainder of the Dark Tobacco District.

METHOD OF STUDY

In planning this investigation two cost accounting routes were laid out. One of these was located in the Burley Tobacco District, the other in the Dark Tobacco District, and a field supervisor was placed in charge of each route. These men were technically trained in agriculture and accounting and were familiar with the practical operations of farming and tobacco growing. The location of the two areas is shown in Figure 1.

Special record sheets were prepared and arrangements were made with tobacco growers to set down on these sheets daily all expenditures of labor, materials and money on the tobacco crop. In selecting farmers to keep the records no effort was made to secure the most successful growers; as nearly as possible average growers were preferred.

The cooperating growers were visited once a week by the route supervisor who checked the records to guard against errors and omissions. At the beginning of the season an appraisal was made of the land upon which the crop was grown and the market rental value of each piece of land. The barns and sticks were also appraised. A complete record was also kept of the amounts and the prices received for the tobacco when delivered to market. For

1922 the detailed records were supplemented by survey records* for burley tobacco from 57 growers and for dark fire-cured tobacco from 65 growers.

CONDITIONS IN THE BURLEY TOBACCO AREA

The Kentucky Burley Tobacco Region occupies the central and northern part of the state. (See Figure 1) The farms furnishing the data for the cost of producing burley tobacco were located in Fayette, Jessamine, Woodford and Scott Counties.**

SOILS

About five-sixths of the farms studied in the Burley District are located in the Trenton limestone area, which covers about 1,200 square miles, or about one-sixth of the central Kentucky limestone region. The soils are mainly of the Hagerstown series as classified by the Bureau of Soils. The most important type is designated as Hagerstown loam. These soils were formed from the disintegration of a highly phosphatic limestone and contain five or six times as much phosphorus as the soils of the remainder of the state.

The topography of this area is level or undulating to rolling, permitting the easy use of labor-saving machinery.

The remaining one-sixth of the burley tobacco farms in the study are typical of the rougher outlying area of the bluegrass region, the soils of which are derived from rocks of the Cincinnatian limestone series and contain much less phosphorus, have a wider range of acidity, a higher percentage of clay and the surface soil is shallower than that of the Trenton limestone area.

*The survey records included the same items as the detailed records but in the former the data were secured at the end of the season. Some of the data were taken from book records and the others were careful estimates. The records were carefully checked. A comparison of the records secured by the survey method with those for the same year secured by the detailed method showed a very close correspondence. Careful investigational work in other states has demonstrated the reliability of statistical data secured by this method. (See Cornell Bull. 295, "An Agricultural Survey," pp. 287-290 and Cornell Bull. 344, pp. 422-433.)

**Business analysis records were secured on 241 farms in Mason and Fleming counties for the year 1922, and cost records by the survey method on the tobacco crop on 72 representative farms. This territory is situated on the northern border of the Burley Tobacco Region. The land is cut up by the Licking River and by the tributaries of the Licking and Ohio Rivers. Most of it is rolling and a considerable part of it is steep. The soil is shallower, less fertile, and has a smaller phosphorus content than that of the central part of the Burley Region.

A relatively smaller portion of the tillable land is planted in tobacco, and the crop yields on an average about two-thirds as much per acre as on the richer Trenton soils.

CROPS AND LIVESTOCK—FARM ORGANIZATION FACTORS

Table 2 shows the organization of 241 representative burley tobacco farms for the farm year 1922. It will be noted that the average size of the farms was 152 acres, of which 65 acres was in crops and 78.6 acres in pasture. Fifty-three percent of the total receipts were derived from tobacco, 15.1 percent from cattle, 15.1 percent from hogs, and 3.6 percent from sheep. The remaining 13 percent came from wheat, poultry and miscellaneous items.

TABLE 2.—Organization of Representative Farms in the Burley Tobacco Region. Average of 241 Farms for the Farm Year 1922

Total area of farm		152 acres
Acres in crops		65
Tobacco	7.6	
Corn	20.7	
Wheat	14.7	
Rye	2.2	
Hay	13.5	
Other crops	6.3	
Pasture		78.6
Per cent of receipts from crops		61.9
Per cent of receipts from livestock		34.5
Per cent of receipts from tobacco		53.1
Per cent of receipts from cattle		15.1
Per cent of receipts from hogs		15.1
Per cent of receipts from sheep		3.6
Farm investment (operator's house not included)		$17,928
Total farm receipts		3,714
Total farm expenses		1,941
Interest on investment at 6 per cent		1,076
Operator's earnings for labor and management (labor income)		697
Value of perquisites furnished by the farm		332
Earnings and perquisites		1,029

Farmers in this region do not follow a fixed rotation system. A common practice is to break a field out of sod, planting the best land of the field in tobacco and the remainder in corn. The field usually is sown in wheat or rye in the fall. Most farmers seed the land to clover or clover and timothy leaving it in hay and pasture for 2 or more years. On exceptionally good land

farmers often grow two crops of tobacco or corn before seeding down to small grain and grass. When this is done grass usually remains for a longer period and bluegrass usually is included in the seeding. The land on smaller farms usually is plowed every 4 or 5 years. On a considerable number of farms in the central part of the Bluegrass Region the bluegrass is stripped and furnishes an annual cash revenue for the seed as well as grazing for livestock. The bluegrass sod often is left down 7 or 8 years or longer. In general only the operators of the larger farms (those of 300 acres or more) harvest the bluegrass seed.

The corn acreage is limited to the amount of corn required to furnish grain for work stock, the farm hogs, for silage in some cases, for a limited number of fat hogs sold on the market and in a few cases for steer feeding. Fat hogs and cattle for the market are found mainly on the richer farms having the more level loam soils previously described.

As a rule little more hay is cut than that necessary for the work stock and farm milk cows. The remainder of the hay fields is grazed. Since there is a deficiency of hay and grain which is supplied by products shipped in, local feed prices are high and this definitely limits the livestock enterprises.

The livestock on the 241 farms referred to in Table 2 averaged as follows: dairy cattle, 4.97 head; beef cattle, 3.68 head; young cattle, 5.28 head; bulls, 3 head; work stock, 4.07 head; sheep, 20.97 head; brood sows, 4 head; other hogs, 35 head; chickens, 192; other livestock, .6 of a unit.

A considerable proportion of the farmers have a small quota of cows of the general purpose type from which they raise calves and sell some surplus butter fat. The stock raised may be sold as butcher cattle or as stocker cattle. A considerable number of the larger farmers buy stock cattle for fattening. The principal function of the cattle raising is the utilization of the available grazing and farm roughage, the latter consisting principally of corn stover and a limited amount of hay. Since the local supply of corn is less than the local demand grain is fed to steers only in limited amounts and most of the steers sold are fattened mainly on grass. Scarcity of corn also has resulted in limiting the fattening of hogs for sale.

Dairy cattle have increased in the area to a marked extent, especially on the smaller farms. Beef cattle and sheep are kept mainly on the larger farms. Cream for butter making is the principal dairy product sold. The greater part of the cream is sold in the Cincinnati, Louisville and Lexington markets.

TENURE

Most of the farms in the Burley District are operated by owners, but the greater part of the tobacco is raised by share croppers. A cropper rents a small tract for tobacco, usually from 5 to 20 acres, this depending upon the working force in his family or the amount of outside labor which he can command. Frequently the cropper grows a few acres of corn on shares. He usually has no interest in any of the other crops or livestock. As a rule, he has the use of a dwelling house and garden and the pasture for one to three horses, also the privilege of keeping some poultry and sometimes two or three hogs for the family meat. In the less fertile parts of the Burley District these perquisites usually are furnished free, while in the richer portion the cropper frequently pays rent for them, varying from $60 to $180 a year. On the more productive land, it is customary for the cropper to furnish work stock and machinery, while on the less productive farms these often are furnished by the landlord. In the latter case, the tenant receives one-third of the corn crop. In practically all cases the proceeds of the tobacco crop are divided equally between the cropper and the landowner.

While the responsibility for the tobacco rests with the cropper, a considerable degree of supervision often is exercised by the landowner, who frequently furnishes some help in periods of rush work. On the other hand the cropper often does farm work for the landlord during periods when the tobacco crop does not require his attention.

MARKETING FACILITIES

Lexington, located near the center of the region, is the largest burley tobacco center in the world. Numerous smaller towns thruout the district have markets where tobacco is received daily during the marketing season. Since 1921 the greater part of the crop has been sold by the cooperative marketing plan.

DARK TOBACCO AREA

The cost route in western Kentucky was located with the view of securing an agricultural district with conditions representative of the counties which make up the Dark Tobacco District. Christian County was chosen because of the variety of soils and crops which are fairly typical of the entire Dark Tobacco area. Hopkinsville, the county seat, was the headquarters of the route supervisor. Nashville, Louisville, Evansville and St. Louis are the principal commercial centers serving this district.

SOILS AND TOPOGRAPHY

The topography of southern Christian County is level to gently rolling and permits of the easy use of labor-saving machinery. The soil of this part of the county is fertile and consists of a yellowish brown to brown silt loam underlaid by a silty clay subsoil having a limestone foundation, largely of the St Louis formation.

In northern Christian County the farms range from 50 to 200 acres in size, the soil is less fertile, being of sandstone foundation of the Chester and Coalmeasures formations. No regular rotation system is followed in this section. The most fertile spots are used for tobacco. Most of the labor is done by the farm owner and his family. A larger proportion of the crop acreage is in tobacco in this section than in southern Christian County. Very little income is received in northern Christian County for crops other than tobacco.

The topography of northern Christian County is, for the most part, irregular and broken. The tobacco grown in this section is noted for its superiority in quality and color, and brings a higher price than the darker, heavier tobacco produced on the richer soils of the southern part of the county.

CROPS AND LIVESTOCK

Table 3 shows the acreage and distribution of the crops grown on a representative group of farms of the region studied. The average size of these farms was 181 acres, of which the crop

area was 52.2 percent. The remaining area was in pasture, woods, farmstead, unoccupied land and waste land.

In the southern part of the county the farming carried on is of a mixed type. The common rotation is corn or tobacco one year, wheat one or two years, and clover one year. Red-top or timothy frequently is sown with the clover, in which case the land usually remains in sod two or three years. The productive livestock are beef cattle, dairy cattle, hogs, sheep and poultry. Most of the farms in southern Christian County range from 150 to 500 acres in size. Tobacco yields as high as 2,000 pounds per acre, but the average is less than 1,000 pounds. The greater part of the labor is done by negroes, about one-half being wage labor and one-half share labor.

TABLE 3.—Acreage and Distribution of Crops on a Typical Group of 70 Farms in Christian County, Kentucky.

Crops	No. of Farms Growing Each Crop	Acreage	Average Acreage Per Farm	Range	Per Cent of Total
Total acreage	.....	12,483.0	181.1	16—900	100.00
Tobacco	70	1,005.8	15.3	3—48	8.50
Corn	70	2,365.5	34.3	9—180	19.00
Wheat	47	1,918.0	40.8	5—225	15.50
Rye	5	81.0	16.2	4—40	.65
Oats	8	65.5	8.2	1.5—15	.52
Clover	19	413.0	21.7	2—55	3.35
Mixed hay	23	302.0	13.1	1—40	2.42
Cowpeas	7	65.0	9.2	2—28	.52
Red top	9	80.5	8.9	3.5—20	.65
Garden and truck	66	104.8	1.6	.25—5	.84
Orchard	23	38.2	1.6	.5—4.5	.31
Sorghum	14	39.0	2.8	.5—15	.31
Millet and peas	1	6.0	6.0	.....	.05
Rape	1	2.0	2.0	.....	.02
Alfalfa	2	8.0	4.0	.....	.06
Millet	3	4.8	1.6	.75—2	.04
Timothy	2	10.0	5.0	3—7	.08
Soybeans	2	7.0	3.5	1—6	.06
Total crops	.....	6,515.95	.....	.....	52.2 Per cent in crops

ELEMENTS IN THE COST OF PRODUCING TOBACCO

The following elements of cost are included in the computation of the cost of producing tobacco: man labor, horse work, land rent, barns and sticks, machinery, manure and fertilizer, insurance, "other" costs, which include costs of cotton cloth, spray materials, coal, wood, seed, etc.

LABOR

The labor operations were grouped as follows: plant bed, field preparation, transplanting, cultivation with plow, cultivation with hoe, topping, worming, suckering and spraying, cutting and housing, curing, stripping and marketing. A small amount of labor was done by women and children and this was kept separate and converted into man hours according to its effectiveness as compared with that of an adult male worker. The labor rates were computed for each farm on the basis of cash wages paid to hired labor plus the value of board consumed in the household and other things furnished. The proprietor's labor was charged at the same rate as the going rate of hired labor.

The horse work rate was based on the annual cost of maintaining work horses in Kentucky as determined by the detailed cost studies of the Department of Farm Economics, University of Kentucky, on representative farms in the two districts. Inasmuch as it was impracticable to obtain an accurate rate on each farm the average rate obtaineed on the farms upon which complete cost figures were kept was applied to each of the farms keeping detailed records on the tobacco enterprise.

LAND RENT

In order to compare costs on all the farms on a common basis a charge for land rent was made for each farm whether it was paid in the form of cash or in a share of the crop. Cash rent was paid for the use of the tobacco land in some cases in each of the areas. For the other farms the estimated cash figure for which the tobacco land would have rented was used. This charge covered taxes, overhead expenses and the maintenance

of a cropping system necessary to keep the land in condition to grow tobacco. This method of charging rent does not give the actual cash cost to the owner operator, nor does it represent the cost incurred by a tenant in the payment of a definite share of the crop. Share rent would include a payment for risk and usually also a profit above the rent.

BARNS AND STICKS

The charge for barns and sticks was based on interest on their depreciated present value, the annual depreciation, repairs, taxes and insurance.

MACHINERY

The item of machinery is a relatively small one in the cost of producing tobacco. The crop is cut by hand and requires no expensive harvesting machinery. A two-horse transplanter costing in the neighborhood of $100 is used by most growers in the more level parts of the Burley territory, while hand setting is practiced on the rougher land and especially in the outlying sections of the Burley region. Dark Fire-Cured tobacco is entirely hand set.

Machinery used in growing tobacco is used also for other crops on the same farms. The charge for machinery in this study was the figure determined for farms in the area upon which complete cost accounts were kept. A flat rate was applied to all the farms in the tobacco study, based on the number of horse hours used in handling the tobacco crop on each farm.

MANURE AND FERTILIZER

The farmer's estimate of the amount and value of the manure applied to land for use of tobacco was taken as the manure charge. The actual cost of the fertilizer was recorded. This, however, was a very small item on most of the farms.

INSURANCE

This item includes hail and fire insurance. It will be noted that the insurance item is much higher in 1919 and 1920 than in subsequent years. In the two years mentioned most growers insured against hail and fire. Following this came a severe slump in the price of tobacco after which very few growers

insured against hail and the number of farmers taking fire insurance and the amount of insurance taken were very much reduced.

"OTHER" COSTS

"Other" costs included tobacco cotton, spray materials, wood or coal for plant bed burning or steaming, wood or coal for curing, and other small cash expenditures.

COSTS AND RETURNS FOR TOBACCO— PRICE CONDITIONS DURING THE PERIOD OF STUDY NOT NORMAL

In planning this study the endeavor was made to select typical conditions as far as was practicable. The land and producers selected were those that appeared to be most typical of the tobacco growing territory of the state. However, certain conditions which were beyond control may have prevented the costs and returns shown from being typical for a long-time period. The main averages presented in this report are for the four years, 1919 to 1922, inclusive. The first year, 1919, was one of an abnormally high price for tobacco and high costs of production. The second year was one of very high costs of production followed by the post-war business depression which began before the crop was sold and during which time occurred a general slump in values and also widespread and very severe damage from wildfire and other fungus diseases which considerably reduced the price of the crop. The new plan of cooperative marketing put into effect in the Burley District during the third and fourth years of the study and in the Dark Tobacco District during the fourth year had an affect upon the returns and profits of tobacco during those years and may have prevented them from being typical for a long-time period.

PRINCIPAL EMPHASIS UPON COSTS IN LABOR AND MATERIALS

While the above mentioned conditions probably served to some extent to render abnormal the costs and returns of the tobacco crop expressed in dollars, the cost in terms of labor and materials was not so greatly affected. This report presents the data in both ways. The latter form of statement is more valuable than the former since it is less affected by conditions beyond the control of the grower.

Part II. Costs and Returns for Burley Tobacco.

A significant point in connection with these cost records is the wide variation in costs on different farms. The cost ranged from $85.06 per acre to $493.60 and from 10c to 81c per pound.

TABLE 4.—Average Cost of Production of Burley Tobacco Per Acre and Other Factors (with and Without Land Rent Charge).* (For the years 1919-1922 inclusive)

		Average Cost Per Acre All Farms	Per Cent of Total Cost (Land Included)
Man labor	330.4 hrs.	$91.21	38.27
Horse work	97.6 hrs.	17.01	7.14
Barns and sticks		28.29	11.87
Machinery		2.52	1.06
Manure and fertilizer		1.19	.50
Insurance		6.57	2.76
Other costs		4.14	1.74
Total "operating costs" (excluding rent)		150.93	63.34
Use of land		87.37	36.66
Total cost per acre		238.30	100.00%
Yield per acre		1,064	
Cost per pound**		22.4c	
Price received per acre		$356.76	
Price received per pound		33.5c	
Profit per acre		$118.46	
Profit per pound		11.1c	
Returns per acre above costs other than land rent		$205.83	
Returns per hour of labor above costs other than labor		63.4c	

*Price conditions during the period probably rendered abnormal the costs expressed in terms of money.

**Land rent included.

Table 4 presents the average costs and other factors in the production of an acre of burley tobacco (See Fig. 2.) The cost is given both with and without the land rent charge.

Table 5 groups the farms by the cost per acre and shows the percentages of acreage and production that fall in the various cost groups. About 36 percent of the acreage and total amount of the crop was produced at a cost between $100 and $200; about 40 percent of the acreage and 37 percent of the production,

between $200 and $300 per acre, and about 23 percent of the acreage and 27 percent of the production at a cost exceeding $300 per acre. These costs included land rent. Table 6 shows the range in costs when land rent is excluded.

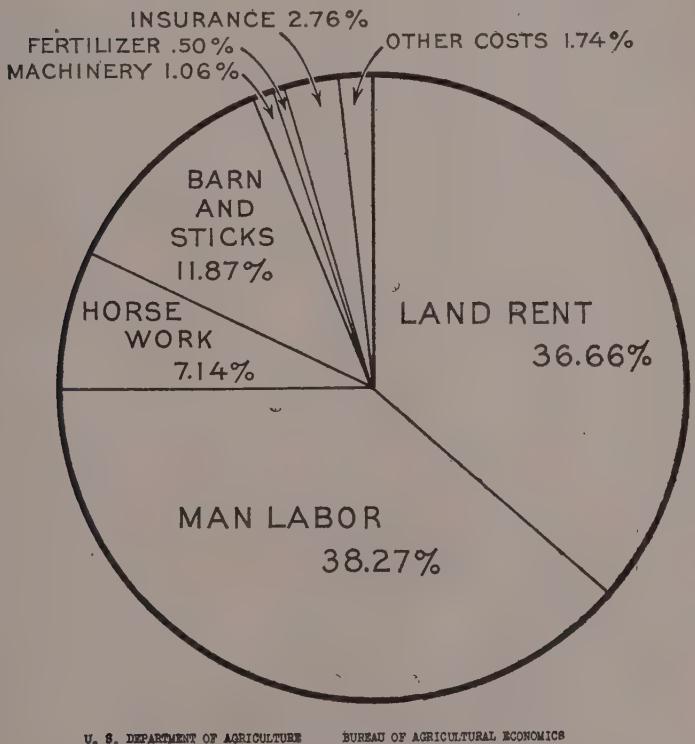

Fig. 2. Distribution of costs of growing and marketing one acre of burley tobacco. 1919-1922.

TABLE 5.—Variation in Cost Per Acre of Burley Tobacco (Including Land Rent).

Cost Per Acre	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Inclusive	1919	1920	1921	1922	1919-1922 Inclusive
Under $100			7.6	77.7	.9			5.3		.7
$100—$200	6.1	1.2	61.8		36.1	3.5	.9	57.3	78.44	36.1
$200—$300	52.1	53.6	30.6	22.3	39.7	46.4	46.4	37.4	21.56	36.6
$300—$400	35.9	34.7			19.0	43.3	39.2			21.6
Over $400	5.9	10.5			4.3	6.8	13.5			5.0

TABLE 6.—Variation in Cost of Burley Tobacco Per Acre (Excluding Land Rent).

Cost Per Acre	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Inclusive	1919	1920	1921	1922	1919-1922 Inclusive
$50—$100			37.5	52.1	22.4			30.0	50.6	21.6
$100—$150	10.4	17.2	50.0	47.0	29.5	6.8	11.0	54.5	48.4	28.5
$150—$200	49.7	43.2	11.4	.9	26.7	47.0	41.7	14.3	1.0	25.5
$200—$250	30.1	27.9	1.1		15.7	34.5	32.7	1.2		17.7
Over $250	9.8	11.7			5.7	11.7	14.6			6.7

TABLE 7.—Relation of Labor Operations on Burley Tobacco to Total Labor Required.

Operation	Average Number of Hours Used Per Acre					Per Cent Total Hrs. Per Acre Used on each Operation
	1919	1920	1921	1922	1919-1922 Inclusive	1919-1922 Inclusive
Plant bed work	19.0	19.2	15.2	15.5	17.38	5.26
Field preparation	22.5	19.5	18.4	16.9	19.32	5.85
Transplanting	40.1	28.5	29.9	25.2	30.84	9.34
Cultivating with plow	14.2	12.4	14.1	12.0	12.97	3.93
Cultivating with hoe	31.0	21.9	23.8	18.9	23.69	7.17
Worming, topping, suckering and spraying	43.8	39.6	46.6	41.7	42.35	12.82
Cutting and housing	63.7	63.6	60.9	49.4	58.45	17.69
Curing	0.2	1.3	0.4	1.0	0.77	.23
Stripping	132.0	114.5	109.3	109.4	117.10	35.45
Marketing	8.5	7.9	5.6	7.0	7.48	2.26
Total	375.0	328.4	324.2	297.0	330.35	100.00

COST AND DISTRIBUTION OF MAN LABOR

The various operations used in the production and marketing of burley tobacco are shown in Table 7 and Figure 3. The average time required was 33 ten-hour days per acre. Stripping required the largest amount of labor (more than a third of the total); cutting and housing came second with nearly 18 percent; worming, topping, suckering and spraying required nearly 13 percent, and transplanting a little over 9 percent. There was a wide range in the total amount of labor used in each of the operations. The range by operations is shown on pages 515 to 518 of the appendix.

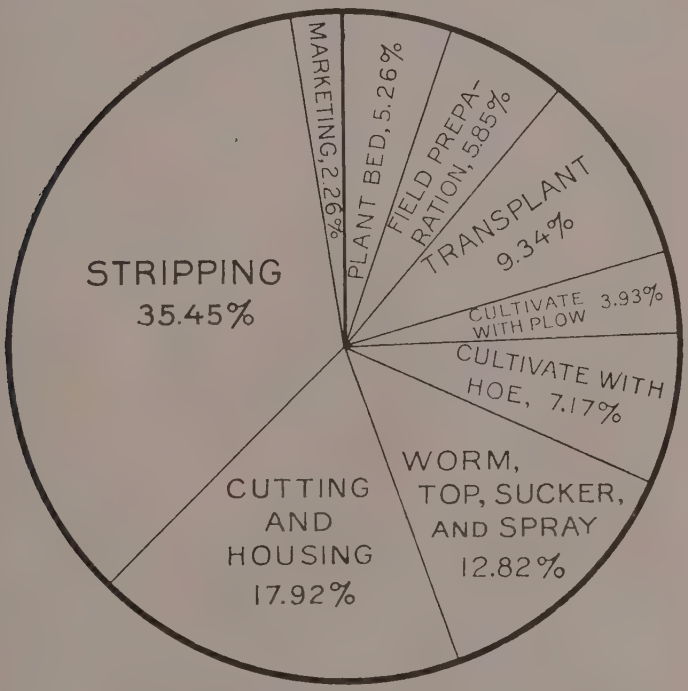

Fig. 3. Relation of labor operations to total labor required in growing and marketing one acre of burley tobacco. 1919–1922.

TABLE 8.—Amount of Labor Per Acre Used by Different Growers of Burley Tobacco.

Time Used Per Acre	No. of Growers Using This Amount of Time
Less than 200 hours	6
200 to 300 hours	105
300 to 400 hours	116
400 to 500 hours	44
More than 500 hours	16

Table 8 shows the amount of labor per acre used by different growers of burley tobacco. Six growers out of 287 used less then 200 hours per acre; 105 used 200 to 300 hours; 116 used 300 to 400 hours; 44 used 400 to 500 hours; and 16 used more than 500 hours per acre.

The wage rate of labor varied with the operation. The highest rate was for the operations of cutting and housing and transplanting. This was because of the heavy demand and competition due to shortness of the time during which these operations must be performed.

Distribution of Labor in Plant Bed Preparation. The labor on plant bed preparation was distributed as follows: getting wood 25.4 percent, breaking and burning bed 2.6 percent, preparing and sowing bed 6.4 percent, stretching cotton on bed 8 percent, weeding bed 38.5 percent.

Distribution of Labor in Field Preparation. The labor in field preparation was distributed as follows: breaking land, 44.9 percent; dragging or rolling, 19 percent; harrowing, 4.2 percent; disking, 26.5 percent; marking off, 5.2 percent; other labor, 3 percent.

DISTRIBUTION OF LABOR IN TRANSPLANTING

Machine Setting. The crops which were transplanted exclusively by machine required an average of 25.1 hours of man labor per acre for transplanting. Of this 21.9 hours or 87.3 percent was for setting and 3.2 hours or 12.7 percent for resetting.

Hand Setting. The crops which were exclusively set by hand required a total of 25.84 hours of man labor for transplanting. Of this 24.5 hours or 95.0 percent was for setting and 1.3 hours or 5.0 percent was for resetting.

Topping, Worming, Suckering and Spraying. Spraying consumed about 5 percent of the total labor in topping, worming, suckering and spraying. It was not practicable to subdivide the operations of topping, worming and suckering as workmen often did all three of these operations at the same time.

Distribution of Labor in Stripping and Marketing. The operations involved in stripping and marketing were distributed as follows: bulking down, 5.5 percent; stripping, 88.2 percent; loading, 2.2 percent, hauling to market, 4.1 percent.

COST OF HORSE WORK

Table 9 shows the amount of horse work used by different growers. The average amount of horse work required was 9¾ ten-hour days per acre. Eight growers used less than 60 hours of horse work per acre; 146 used 60 to 100 hours; 116 used 100 to 150 and 17 used more than 150 hours per acre. The largest demand of the crop for horse work came during the period of field preparation (38.6% of the total). Cultivating required 10.9 percent of the total and housing 22.6 percent.

TABLE 9.—Amount of Horse Work Per Acre Used by Different Growers of Burley Tobacco.

Hours Per Acre	No. of Growers Using This Number of Hours
Less than 60 hours	8 growers
60 to 100 hours	146 growers
100 to 150 hours	116 growers
More than 150 hours	17 growers

The amount of horse work used in the various operations is shown in Table 10. The variation in the amount of horse work used in the various operations is shown in the appendix. (Pp. 518 to 520).

Of horse work used on the plant bed 84.4 percent was used in hauling wood and 15.6 percent in breaking the bed.

Horse work in field preparation was distributed as follows: breaking land, 40.5 percent; dragging or rolling, 18.1 percent; harrowing, 5.6 percent; disking, 31.5 percent; marking off, 4.1 percent; other work, .2 of 1 percent.

TABLE 10.—Relation of Various Operations on Burley Tobacco to Total Horse Work Required.

Operation	Average Number of Hours Used Per Acre					Per Cent Total Hrs. Per Acre Used on Each Operation
	1919	1920	1921	1922	1919-1922 Inclusive	1919-1922 Inclusive
Plant bed work	4.5	5.7	3.8	5.7	5.11	5.24
Field preparation	40.1	35.0	37.1	37.9	37.67	38.60
Transplanting	8.8	8.8	12.1	12.9	10.61	10.87
Cultivating with plow	15.1	13.5	16.1	15.2	14.86	15.23
Cutting and housing	20.9	23.3	16.1	24.2	22.04	22.59
Curing		.2			.04	.04
Stripping	.2	.2		.2	.15	.15
Marketing	8.4	7.1	5.2	6.6	7.10	7.28
Total	98.0	93.8	90.4	102.7	97.58	100.00

LAND RENT CHARGE

As previously explained the charge for land rent represented the cash value at the beginning of the season of the use of the land for the year. For the land which did not rent for cash, the estimated amount for which it would have rented for cash, that is its opportunity rental, was used. It will be noted from Table 14 that this figure was very high in 1919 and 1920, but considerably lower during the subsequent years.

The average land rent charge for the 287 crops was $87.37 per acre. Eighteen crops carried a charge of less than $35 per acre; for 69 the charge ranged from $35 to $50; for 142 crops from $50 to $100; for 28 crops from $100 to $125; and for 30 crops over $125.

The sale value of farms in the region during the first two years of the study ranged from $150 to $800 per acre in the

more fertile central portion of the Bluegrass Region and from $60 to $200 an acre in the less fertile outlying portion of the region. Following 1920 the sale value declined about a third and by 1923 the value was about half the values of 1919 and 1920.

The charge designated as "rent" is much higher than is usually made for the use of land which sells at the prices found in this region. The most important factors responsible for the high charge are pointed out in the following discussion.

The amount of land that will meet the requirements of burley tobacco is limited. Because of its topography and physical characteristics much of the land is unsuitable for tobacco production. While on some farms most of the land is good tobacco land, on many farms only a small percentage of the land is suited to the crop.*

On land which is suitable for tobacco production it has not generally been found practicable to grow the crop more frequently than once in four years. During the intervening years, in order to maintain the land in the required productive condition, it is necessary to keep it in other crops, particularly sod crops, which give relatively small net returns. In other words, the tobacco crop, in the year it is grown, must pay a considerable part of the carrying charges on the land during the intervening years. Adjustment between the different crops could be made by charging an average rental figure to all crops in the cycle and then crediting the pasture and other crops with an allowance for their part in preparing the land for growing tobacco. The tobacco crop would then be charged with a lower rent, but with an additional amount to pay for the contribution made by the other crops. The total charge would not be changed. By charging each of the crops with the prevailing cash rental rate of the region for the particular crop an approximate equity is maintained between crops. The principle involved is illustrated in Tables 11 and 12.

In Table 11 is shown a common crop combination used by tobacco producers in the Burley Tobacco Region. The cash

*During the past few years certain sections outside the so-called Burley Tobacco Region have demonstrated that they can produce burley tobacco with fair success. This new territory is located principally in the states of Tennessee, Missouri, and in Southern and Western Kentucky.

rental figures shown are those which were commonly paid during the first year of the study.

TABLE 11.—Typical Crop Combination Used in the Production of Burley Tobacco, with Cash Rents Commonly Paid in 1919.

Crop	No. of Acres	Cash Rental Per Acre	Total Rent
Tobacco	10	$100	$1,000
Corn	30	15	450
Wheat	40	6	240
Clover and grass	40	8	320
Rotation pasture	40	5	200
Permanent pasture (untillable)	30	4	120
Total	190		$2,330
Expenses for taxes, grass seed, upkeep of fences, etc.			620
Net rent			$1,710
Average rent per acre			$9

This is a four-year rotation of tobacco or corn followed by wheat, hay and rotation pasture. It will be noted that only 10 acres out of a total area of 190 acres was used for tobacco. A rental of $100 per acre was charged for the tobacco land, but the much lower rentals on the acreages in the other crops brought the average rent for the total area down to $9.00 per acre.

The excellent prices which prevailed for burley tobacco during the war period induced a considerable number of growers to increase the tobacco acreage and reduce or eliminate the acreage of corn and other crops. This was feasible on some of the best land, but could not be continued profitably as a permanent system. When the character of the land permits an increase in the tobacco acreage and a reduction of the low rental crops this gives an average rental return considerably greater than that shown in Table 11.

A typical crop combination used in the burley tobacco region, particularly on the larger farms, is shown in Table 12. This is an eight-year system with bluegrass occupying the land 5 years in eight. The bluegrass seed is harvested and the grass grazed. The system keeps the land in the loose, friable condition so favorable for the production of burley tobacco of high quality and yield.

TABLE 12.—Typical Eight-Year Cropping System with Burley Tobacco One Year and Bluegrass Five Years, with Cash Rents Commonly Paid in 1919.

Crop	No. of Acres	Cash Rental Per Acre	Total Rent
Tobacco	10	$125	$1,250
Wheat or rye	10	6	60
Clover	10	6	60
Bluegrass for seed and pasture....	10	10	100
Bluegrass for seed and pasture....	10	10	100
Bluegrass for seed and pasture....	10	10	100
Bluegrass for seed and pasture....	10	10	100
Bluegrass for seed and pasture....	10	10	100
Total	80		$1,870
Expenses for taxes, grass seed, fence upkeep, etc.			300
Net rent			$1,570
Average rent per acre			$19.62

Since an old bluegrass sod furnishes the rich, friable condition of soil which gives the high quality and yield desired by growers a higher rental figure of $125 is used.

On a considerable proportion of the farms of Central Kentucky a system is used in which tobacco is grown two years in succession followed by small grain, clover and bluegrass for several years, during which the land is built up for growing tobacco again. Such a system is feasible on exceptionally strong land when the topography is such that excessive washing will not occur. By thus cutting down the acreage of low rent crops this system gives an average rent from one-third to one-half greater than that of the eight-year cropping system shown in Table 12 in which tobacco was grown only one year in eight.

COST OF BARNS AND STICKS

The cost of housing burley tobacco is a heavy charge against the crop. This type of tobacco is air cured and considerable space must be left between the plants in the barn during the curing process. Overcrowding of green tobacco in the barn conduces to house-burning (a form of rotting) during the curing process and may result in rendering the tobacco almost worthless. Burley tobacco therefore requires much more barn space than fire-cured tobacco, since the green plants of the latter can be placed more closely and house burning prevented by fires under the tobacco.

The charge for barns and sticks consisted of interest on their value based on cost of replacement less depreciation, annual depreciation, taxes, insurance and repairs. For 58 crops the charge for barns and sticks was less than $20 per acre; for 120 crops the charge ranged from $20 to $30; for 79 crops, from $30 to $40, and for 30 crops the charge was over $40.

Under the 1919 scale of lumber prices the cost of tobacco barns ran from $300 to $450 per acre capacity and the annual cost of barns and sticks ranged from $9.34 to $42.68 per acre. After 1920 the cost of barns and sticks fell somewhat and the charge for that item in 1922, 1923 and 1924 was $24.12, $19.86 and $18.01, respectively.

From 700 to 1400 sticks are required per acre, depending on the number of plants and the size of the tobacco when ready

TABLE 13.—Barn and Sticks Charge Per Acre for Burley Tobacco.*

BARN

Item	Charge	Per Cent of Total Barn Charge	Per Cent of Total Barn and Sticks Charge
Interest on average value of $235	$14.10	52.81	49.84
Depreciation	5.87	21.99	20.75
Taxes	2.34	8.76	8.27
Insurance	2.93	10.97	10.36
Repairs	1.46	5.47	5.16
Total barn charge	$26.70	100%	94.38%

STICKS

Interest on average value of $12	$0.72	45.28	2.55
Depreciation	.60	37.74	2.12
Taxes	.12	7.55	.42
Insurance	.15	9.43	.53
Total stick charge	$1.59	100%	5.62%
Total barn and stick charge	$28.29		100%

*The average value of barns was $235 per acre and of sticks $12. The interest rate used was 6%. Depreciation on barns was 2.5%, on sticks 5%.

for harvesting. The cost of sticks ranged from $18 to $30 per 1000 in 1919 and 1920 and $10 to $15 in 1921 and 1922. Since tobacco sticks are exposed to the weather for only the short time the plants are wilting after cutting, before hauling to the barn, the sticks last indefinitely, the principal loss being by breakage and loss in the fields, or by theft from the barns. The loss and depreciation on sticks was estimated at 5 per cent. Table 13 shows the items entering into the charge for barn and sticks.

COST OF MACHINERY

After 1921 the machinery charge was considerably less than for the first three years of the study. The charge averaged $2.52 per acre for the 287 crops. For 127 crops the charge was less than $2.00 per acre; for 92 crops it ranged from $2.00 to $3.00 per acre; for 25 crops from $3.00 to $4.00 per acre and for 22 crops over $4.00 per acre.

COST OF MANURE AND FERTILIZER

On 182 of the 287 crops no application of manure or fertilizer was made. Of the 105 crops upon which manure or fertilizer was used, the charge on 53 crops was less than $1.00 per acre; on 30 crops from $1.00 to $5.00 per acre; and on 22 crops more than $5.00 per acre.

COST OF INSURANCE

Fire Insurance. The insurable risks on tobacco are those against fire and hail. The standard fire insurance rate per $100.00 of insurance for burley tobacco was $1.20 for 3 months, $1.50 for 4 months, $1.80 for 5 months and $2.10 for 6 months. Since the curing and delivery of the crop to market usually are completed within 4 or 5 months from the date of harvesting it is seldom insured for a longer period than 5 months.

The maximum insurance which could be secured on burley tobacco was $200.00 per acre for the best tobacco growing territory in the central burley counties but the amount of insurance granted on a crop seldom exceeded $150.00 per acre. For the

outlying or border counties of the burley district the maximum insurance was $150.00 per acre, and very few crops were insured for more than $100.00 per acre.

The small average insurance charge for 1921 and 1922 is explained by the fact that most farmers did not carry insurance on the tobacco crop in those two years.

Hail Insurance. The hail insurance rate in the counties included in the study during the first 3 years was $7.00 per $100.00, after which time the rate was reduced to $4.50 per $100.00.

OTHER COSTS

Costs other than those discussed above averaged $4.14 per acre and constituted 1¾ per cent of the total cost of producing burley tobacco. Plant bed cotton, Paris green and arsenate of lead for spraying were the most important items under "other costs." Wood and coal for sterilizing the plant bed and heating the stripping room during stripping in cold weather were included in "other costs."

111 farms had "other costs" of less than $3.00 per acre.
102 farms had "other costs," ranging from $3.00 to $5.00 per acre.
39 farms, from $5.00 to $7.00 per acre.
35 farms, over $7.00 per acre.

Quantities of Materials Used. Growers made an average of 42 square yards of plant bed per acre of tobacco planted. This is much more than would be required if all beds did well, but the extra bed space represented an attempt on the part of growers to guard against poor germination of seed, damage by frost and other unforseen contingencies. A good many successful growers were able to provide sufficient plants by sowing 20 to 30 square yards of bed per acre of tobacco to be set. The tobacco cotton lasted on an average nearly two years.

It was not practicable to determine the actual quantity of fuel used in burning plant beds since this represented a variety of grades including brush, corn fodder and waste wood. On

many farms all or part of the materials used for burning beds had no cash value.

As an average for all the crops the equivalent of about 1¾ pounds of Paris green per acre was used. No insecticides were used on 130 crops. For the crops upon which spray material was used the quantity ranged from 1/3 pound to 5 pounds per acre.

The quantity of fertilizer used was very small, 182 farms using none at all.

TOTAL COST PER ACRE

In Table 14 are shown the items in the cost per acre and the relation of each item to the total cost. Table 15 shows the relationship of the items when land rent is excluded.

TABLE 14.—Relation of Items of Cost of Production of Burley Tobacco Per Acre to Total Cost (Land Rent Included).

Items	1919	1920	1921	1922	1923	1924	1919-1922 Inclusive	
	Cost	Cost	Cost	Cost	Cost	Cost	Cost	% Total Cost
Man labor	$121.57	$116.14	$62.76	$57.68	$72.23	$66.97	$91.21	38.27
Horse work	19.55	20.77	13.59	13.34	11.77	11.92	17.01	7.14
Barn and sticks	27.71	34.46	28.39	24.12	19.86	18.01	28.29	11.87
Machinery	3.57	2.26	2.45	1.87	1.72	1.73	2.52	1.06
Manure and fertilizer	1.30	1.96	1.40	.45	.60	1.25	1.19	.50
Insurance	11.57	10.99	.12	1.46	.32	.63	6.57	2.76
Other costs	4.83	5.81	2.97	2.76	2.54	2.61	4.14	1.74
Total cost (excluding land rent)	$190.10	$192.39	$111.68	$101.68	$109.04	$103.11	$150.93	63.34
Use of land	99.00	106.66	68.00	70.33	33.47	33.42	87.37	36.66
Total cost per acre	$289.10	$299.05	$179.68	$172.01	$142.51	$136.53	$238.30	100.00

TABLE 15.—Relation of Items of Cost of Production of Burley Tobacco to Total Cost (Land Rent Excluded)—1919-1922, Inclusive.

Item	Average Cost Per Acre	Per Cent of "Operating Cost"
Man labor	$91.21	60.44
Horse work	17.01	11.27
Barn and sticks	28.29	18.74
Machinery	2.52	1.67
Manure and fertilizer	1.19	.79
Insurance	6.57	4.35
Other cost	4.14	2.74
Total "operating cost"	$150.93	100.00

Table 16 presents the cost of producing burley tobacco based on the four-year average. Growing plants constituted 2.88 per cent of the cost; growing the crop in the field, 59.01 per cent; cutting, housing and curing, 23.35 per cent; stripping, 13.35 per cent, and marketing, 1.41 per cent (See Fig. 4).

The divisions as presented in this table are those in terms of which the practical grower is most accustomed to think. The table shows the total cost of the crop as incurred during progressive stages of production. By the use of the table two or more persons jointly interested in the growing of a crop of tobacco can readily compute what portion of the proceeds of the sale of the crop each is entitled to, if the proceeds are to be divided in proportion to what each of the persons contributes.

TABLE 16.—Cost Factors in Growing and Marketing One Acre of Burley Tobacco.

(Average of 4 yrs. (1919-1922) on 287 crops.)

			Per Cent of Total Cost
Cost of Growing Plants:			
Man labor	17.38 hrs.	$3.50	
Horse work	5.11 hrs.	.90	
Implement cost		.13	
Cotton for plant beds		1.40	
Fertilizer		.30	
Wood for burning		.50	
Seed and plants bought		.14	
Total cost of growing plants		$6.87	2.88

TABLE 16.—Continued.

			Per Cent of Total Cost
Cost of Growing Tobacco:			
Land rent		$87.37	
Man labor:			
Field preparation	19.32 hrs.	4.28	
Transplanting	30.84 hrs.	9.80	
Cultivating with plow	12.97 hrs.	3.26	
Cultivating with hoe	23.69 hrs.	5.76	
Topping, worming, suckering and spraying	42.35 hrs.	11.98	
Horse work in field preparation	63.14 hrs.	11.00	
Machinery cost		1.63	
Manure and fertilizer		.89	
Spray materials (insect poisons)		.70	
Hail insurance		3.94	
Total cost of growing tobacco		$140.61	59.01
Cost of Cutting, Housing and Curing:			
Man labor:			
Cut and house	58.45 hrs.	19.81	
Cure	.77 hrs.	.20	
Horse work:			
Cut, house and cure	22.08 hrs.	3.84	
Machinery cost		.57	
Barn and sticks		28.29	
Fire insurance		2.63	
Coke for curing		.20	
Miscellaneous		.10	
Total cost of cutting, housing and curing		$55.64	23.35
Stripping:			
Man labor	117.10 hrs.	30.68	
Horse work	.15 hrs.	.03	
Machinery cost			
Fuel for stripping room		1.10	
Total cost of stripping		$31.81	13.35
Marketing:			
Man labor	7.48 hrs.	1.95	
Horse work	7.10 hrs.	1.24	
Machinery charge		.18	
Total marketing cost		$3.37	1.41
Total cost of growing and marketing 1 acre of burley tobacco		$238.30	100%

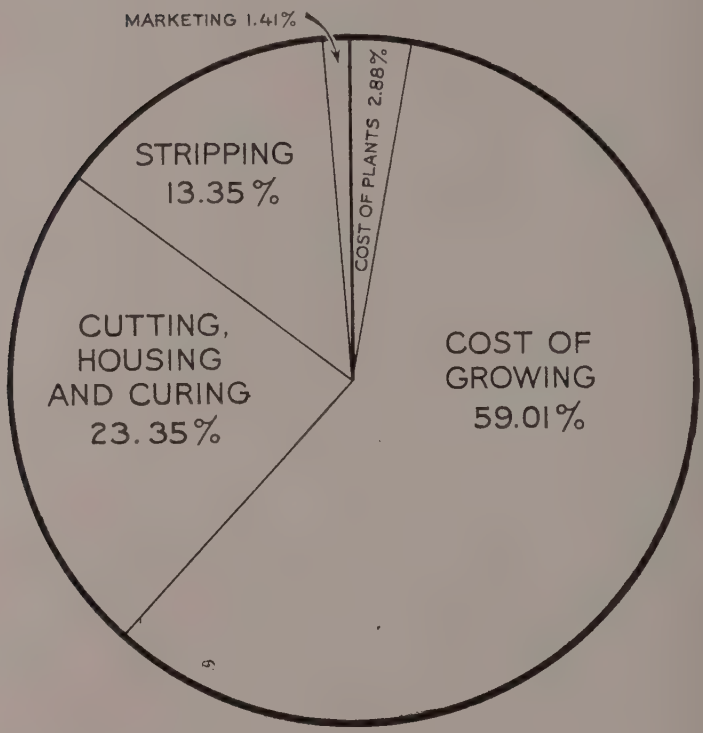

Fig. 4. Cost factors in growing and marketing one acre of burley tobacco. 1919–1922.

YIELD PER ACRE

There was a marked variation in the yield per acre. The average yield for the 287 crops was 1,064 pounds. For about 5 per cent of the total acreage the yield was less than 600 pounds per acre, and for about 6 per cent more than 1,500 pounds per acre. A yield ranging from 600 to 900 pounds was obtained on 22½ per cent of the total acreage; 900 to 1,200 pounds on 42.2 per cent of the acreage; and 1,200 to 1,500 pounds on 24.3 per cent of the acreage.

COST PER POUND

The average cost per pound for producing burley tobacco was 22.4c, thecost for the individual years being 25.3c for 1919, 32.9c for 1920, 15.8c for 1921 and 15.8c for 1922.

The extreme range in cost was 10c per pound on one farm in 1921 and 81c per pound on another farm in 1919. This range and the percentage of the crop produced between these two extremes is shown in Tables 17, 18 and 19. For the entire period about one-third of the total production was produced at a cost of 17c or less per pound, about half at 21c or less, about 2/3 at 24c or less, and about 9/10 of the crop at 34c or less.

TABLE 17.—Variation in Cost of Burley Tobacco Per Pound (Including Land Rent).

Cost Per Pound in Cents	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
10 —15	.83		32.25	44.91	19.49	1.63		34.39	49.53	22.28
15.1—20	9.68		66.51	41.99	25.22	13.28		64.93	39.95	26.51
20.1—25	34.54	10.68	1.24	8.18	15.40	38.34	13.64	.68	7.23	17.18
25.1—30	24.84	29.13		2.12	15.14	23.48	32.62		1.42	14.68
30.1—35	23.94	17.56		2.80	12.17	20.18	16.25		1.87	10.29
35.1 & over	6.17	42.63			12.58	3.09	37.49			9.06

TABLE 18.—Variation in Cost of Burley Tobacco Per pound (Excluding Land Rent).

Cost Per Pound in Cents	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
5 —10	2.01		62.10	68.51	31.54	3.54		63.70	71.77	34.47
10.1—15	31.32		35.22	28.70	22.95	37.28		34.17	26.35	24.97
15.1—20	41.11	40.10	2.68	2.79	23.07	41.93	47.09	2.13	1.88	23.86
20.1—25	17.19	39.96			15.01	12.96	37.91			12.14
25.1—30	4.74	13.38			4.74	2.84	0.71			2.97
30.1—35	1.73	6.24			2.07	.81	5.03			1.34
35.1 & over	1.90	.32			.62	.64	.26			.25

TABLE 19.—Variation in Cost of Burley Tobacco Per Pound and Cumulative Percentage of the Crop Produced at Various Costs (Including Land Rent).

Cost Per Pound* (in Cts.)	Cumulative Per Cent of Acreage					Cumulative Per Cent of Production				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
10.4 or less			6.8	2.0	1.51			5.8	3.0	1.81
11.4 or less			8.4	8.1	3.77			8.6	10.2	4.69
12.4 or less			11.8	14.3	6.30			11.9	17.7	7.73
13.4 or less			14.7	23.7	9.86			15.6	28.0	11.80
14.4 or less			25.1	35.8	15.25			26.6	40.6	17.64
15.4 or less	.8		33.5	45.0	19.63	1.6		35.4	49.5	22.41
16.4 or less			52.8	62.5	27.96			56.7	66.0	30.95
17.4 or less	2.0		75.8	73.1	34.75	3.5		79.0	76.1	37.99
18.4 or less	6.9		89.9	82.4	41.05	10.3		91.3	85.2	44.84
19.4 or less	8.4		98.4	85.9	43.71	12.2		99.1	88.5	47.59
20.4 or less	10.5		98.7	88.3	45.17	14.8		99.3	90.9	49.24
21.4 or less	17.1	.2		90.9	47.99	22.1	.2		93.3	52.34
22.4 or less	26.3	1.3		92.7	51.47	33.3	1.3		94.6	56.40
23.4 or less	36.6	3.7	100	94.0	55.61	43.6	4.2	100	95.8	60.66
24.4 or less	39.8	10.5		95.1	58.60	47.6	13.6		96.8	64.26
25.4 or less	48.1	12.5			61.45	56.6	15.8			67.46
26.4 or less	50.4	15.9			62.98	59.0	19.8			69.06
27.4 or less	54.9	21.8			65.74	63.7	27.5			72.13
28.4 or less	61.8	26.2		97.2	69.53	70.2	32.1		98.2	75.58
29.4 or less	68.1	31.6			72.67	75.7	38.3			78.58
30.4 or less	79.1	44.0		98.0	79.19	85.9	49.8		98.7	84.35
31.4 or less	85.5	46.2			81.54	90.9	51.6			86.25
32.4 or less	88.0	49.4			83.07	93.4	55.0			87.76
33.4 or less	90.7	52.2		100	85.21	95.0	57.8		100	89.33
34.4 or less	93.5	56.4			87.07	96.8	61.6			90.71
35.4 or less	95.8	60.5			88.78	98.4	65.1			91.94
36.4 or less	96.4	66.7			90.52	98.6	71.0			93.29
37.4 or less		74.3			92.45		78.5			94.91
38.4 or less	96.6				92.51	98.7				94.94
39.4 or less		84.3			95.04		89.0			97.21
40.4 or less	97.0	86.8			95.78	98.9	90.9			97.68
41.4 or less	97.2	88.4			96.23	99.0	92.2			97.98
42.4 or less		89.5			96.50		93.0			98.15
46.4 or less	98.6	94.8			98.04	99.6	95.5			98.87
47.4 or less	99.1	94.8			98.39	99.8	96.2			99.09
49.4 or less		96.4			98.81		97.1			99.29
55.4 or less		98.4			99.33		99.0			99.71
66.4 or less		100			99.74		100			99.93
81 or less	100				100.00	100				100.00

*Price conditions during the period probably rendered abnormal the costs expressed in terms of money.

TABLE 20.—Relation of Yield of Burley Tobacco to Cost.

Pounds Per Acre	Per Cent Total Acres					Cost Per Acre, in Dollars					Cost Per Pound, in Cents				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
300— 600	7.8	9.9	1.1		4.8	$195.53	$249.98	$106.24		$221.09	39.5	48.5	19.0		43.5
600— 900	18.9	41.0	15.8	13.9	22.5	244.34	264.89	112.53	$167.45	226.19	31.1	34.6	14.7	21.4	29.2
900—1200	25.6	36.3	44.2	59.6	42.2	273.56	312.36	173.75	171.32	220.03	25.6	30.6	16.4	16.4	21.0
1200—1500	32.4	12.8	32.3	23.4	24.3	331.06	408.35	214.59	177.07	272.08	24.8	30.3	16.1	13.4	20.4
1500—1800	13.3		4.0	3.1	5.3	330.76		220.01	166.67	287.68	21.1		14.1	10.4	18.3
Over 1800	2.0		2.6		.9	317.11		226.18		284.05	15.8		11.8		14.4

RELATION OF YIELD TO COST

The relation of yield to cost is shown in Table 20. The lowest yields per acre were associated with the highest costs per pound and the highest yields per acre with the lowest costs per pound. Growers obtaining less than 600 pounds per acre had an average cost of 43.5 cents per pound; those obtaining between 600 and 900 pounds per acre had an average cost of 29.2 cents per pound; those obtaining 1,200 to 1,500 pounds per acre had an average cost of 21.0 cents per pound. The number of farms having a production of more than 1,500 pounds per acre was not sufficiently large to make the average cost per pound for those farms significant.

RELATION OF AMOUNT OF LABOR EXPENDED TO COSTS. RETURNS AND PROFITS

The 287 farms were classified on the basis of varying amounts of labor expended upon them. There was an increase in yield with increased labor expended. The farms having the lowest labor expenditure ranging from 175 to 250 hours had yields averaging 842.25 pounds per acre. The farms having the highest labor expenditure, ranging from 475 to 550 hours per acre, had yields averaging 1,324.21 pounds.

The costs per acre increased as labor expenditures increased and ranged from an average of $147.13 per acre for farms having the lowest labor expenditure to an average of $350.49 for farms having the highest labor expenditure.

There was a marked difference in profit per acre in the different groups. The farms having the lowest labor expenditure showed profits averaging $2.15 per acre. The farms having the highest labor expenditure showed a profit which averaged $273.94 per acre (Table 21).

It is evident that at the price prevailing for tobacco during this period extra labor and care expended in cultivating and handling the tobacco crop was well remunerated.

TABLE 21.—Relation of Amount of Labor Expended on Burley Tobacco to Costs, Yields, Returns and Profits Per Acre.
(4 Years, 1919 to 1922.)

Hours Expended Per Acre	Number of Farms	Yield Per Acre	Cost Per Acre	Receipts Per Acre	Profit Per Acre
175—250	43	842.25	$147.13	$149.28	$2.15
250—325	98	1051.45	238.18	337.29	99.11
325—400	86	1114.94	262.64	395.29	132.65
400—475	37	1153.62	294.22	430.98	136.76
475—550	23	1324.21	350.49	624.43	273.94

COMPARISON OF FACTORS ON FARMS HAVING HIGHEST PROFITS PER POUND AND LOWEST PROFITS PER POUND

A comparison of the ten farms having the highest profits per pound with the ten farms having the lowest profits per pound is shown in Table 22. The largest profits are shown for the year 1919 and varied from 52.5 cents per pound for the highest profit group to a loss of 13.8 cents per pound for the lowest profit group. For the year 1920, the poorest year, the groups showed losses of 3.5 cents per pound and 37.4 cents per pound, respectively.

TABLE 22.—Comparison of Factors of 10 Burley Tobacco Farms Having Highest Profit Per Pound With 10 Farms Having Lowest Profit Per Pound, and Average—4 Yrs., 1919-1922.

Item	Average Per Acre All Farms All Years	1919		1920		1921		1922	
		10 Highest Profit	10 Lowest Profit	10 Highest Profit	10 Lowest Profit	10 Highest Profit	10 Lowest Profit	10 Highest Profit	10 Lowest Profit
Man labor { hours	330.4	377.3	348.9	348.5	274.7	365.2	309.3	301.0	326.8
{ cost	$91.21	$120.71	$107.83	$120.76	$97.78	$73.10	$56.45	$58.57	$63.12
Horse work { hours	97.6	90.6	113.3	85.2	91.8	97.2	91.2	104.6	99.8
{ cost	$17.01	$18.11	$22.67	$18.75	$20.20	$15.25	$14.07	$13.59	$12.96
Barns and sticks cost	28.29	31.32	21.86	36.08	33.73	30.94	29.69	22.05	28.69
Machinery cost	2.52	3.20	3.00	2.49	2.23	3.35	1.48	1.84	1.74
Manure and fertilizer cost	1.19	1.13	.27	1.12		2.23	.65	.22	.83
Insurance cost	6.57	12.39	9.48	14.68	8.62	.10	.23	4.09	2.04
Other costs	4.14	3.53	3.51	6.44	4.24	3.35	2.64	3.75	1.92
Total "operating cost" (land rent excluded)	150.93	190.39	168.62	200.32	166.80	128.32	105.21	104.11	111.30
Use of land	87.37	119.64	56.00	109.22	122.60	66.56	65.23	59.49	83.44
Total cost per acre	$238.30	$310.03	$224.62	$309.54	$289.40	$194.88	$170.44	$163.60	$194.74
Yield per acre, pounds	1,064	1,538.9	616.5	1,215.1	615.2	1,288.2	957.9	1,386.7	874.0
Cost per pound*	22.4c	20.1c	36.4c	25.5c	47c	15.1c	17.8c	11.8c	22.3c
Price received per acre	$356.76	$1,117.14	$139.50	$267.80	$59.36	$389.52	$118.30	$503.31	$165.29
Price received per pound	33.5c	72.6c	22.6c	22.0c	9.6c	30.2c	12.3c	36.3c	18.9c
Profit or loss per acre*	$118.46	$807.11	—$85.12	—$41.74	—$230.04	$194.64	—$52.14	$339.71	—$29.45
Profit or loss per pound*	11.1c	52.5c	—13.8c	—3.5	—37.4	15.1c	—5.5c	24.5c	—3.4c

*Land rent included.

In three years of the four the farms making the highest profits per pound used a greater amount of labor than those making the lowest profit per pound, and in three years out of four incurred a higher cost per acre. The chief causes of the difference in profits appear to be yield per acre and price received per pound. The high profits farms in all four years secured markedly higher yields and prices than did the farms showing the lowest profits per acre.

These data naturally raise the question as to how growers can secure the high yields and prices so vital to profits in tobacco production. A contrast of the methods of successful and unsuccessful growers indicates the importance of the following points:

1. Limitation of the tobacco crop to land which has been made ready by several years of preparatory treatment, in which the use of legumes and sod and the grazing and manuring of livestock usually play a prominent part in putting the land in the required rich, friable condition.

2. An abundant supply of vigorous, early plants which favor a full stand, save the expense of resetting, and conduce to the quality and color of leaf called for by the market.

3. Painstaking and skillful work on the crop during the stages of its production, housing, and preparation for the market. The wide differences of prices received for the tobacco here reported are in no small measure due to differences in the handling of the crop.

Cultural methods best suited to the production of tobacco of high quality and yield have been worked out by the Department of Agronomy of the Kentucky Agricultural Experiment Station, and bulletins describing these methods are available for distribution to farmers upon request.

COSTS, RETURNS AND NET PROFITS FOR BURLEY TOBACCO

Attention is called here to the point already referred to (p. 453) that price conditions prevailing during the period of this study may have rendered abnormal the costs and returns of tobacco especially as expressed in terms of money.

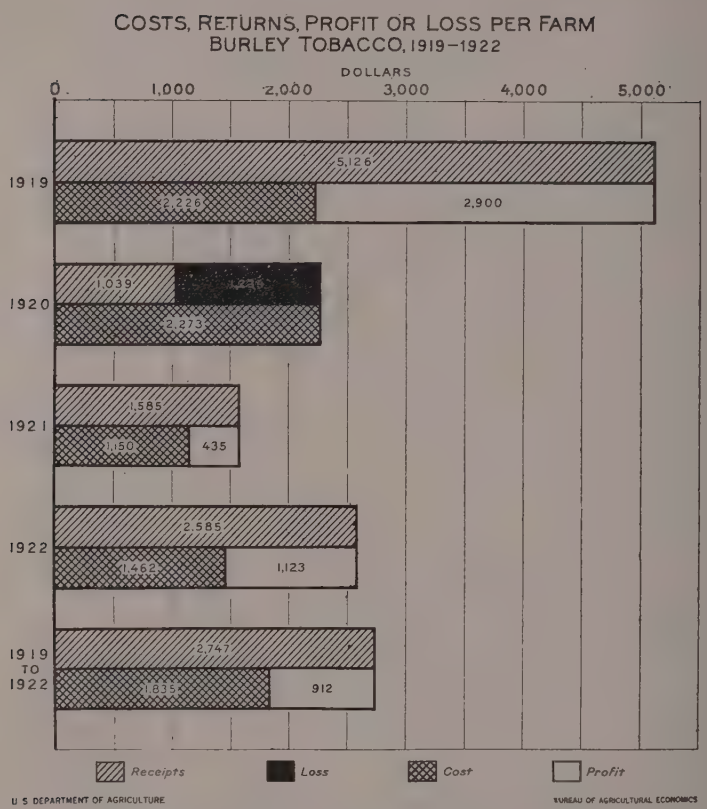

Fig. 5. Costs, returns, profit or loss per farm, burley tobacco, 1919 1922.

Table 23 gives a summary of the cost and net returns for burley tobacco for the farms studied during the four-year period beginning 1919.* It will be noted that the receipts from tobacco per farm as an average for 4 years were $2,747, the cost $1,835 and the profit per farm $912. The tobacco brought an average of $356 per acre and cost $238 per acre leaving a profit of $118 per acre. The price received per pound was 33.5c, the cost 22.4c, leaving a profit of 11.1c per pound as an average for the four years (See Figures 5, 6, and 7).

*Returns and profits were not available for the crops of 1923 and 1924 since the tobacco of most of the growers was pooled in the Burley Tobacco Cooperative Marketing Association, and final payments had not been made for these crops at the time of the preparation of this report.

TABLE 23.—Costs, Returns and Profit or Loss Per Acre of Burley Tobacco for Four Years, 1919 to 1922*

(Computed on Farm Basis)**

	1919	1920	1921	1922	1919-22
Number of crops studied	81	74	43	89	287
Number acres tobacco	625.5	562.6	273.1	753.0	2,214.2
Acres tobacco per farm	7.7	7.6	6.4	8.5	7.7
Yield per acre (pounds)	1,141	908	1,139	1,090	1,064
Sales of tobacco per farm	$5,126.43	$1,038.70	$1,585.22	$2,584.68	$2,747.05
Cost per farm	2,226.07	2,272.78	1,149.95	1,462.08	1,834.91
Profit or loss per farm	2,900.36	—1,234.08	435.26	1,122.59	912.14
Sales of tobacco per acre	665.77	136.67	247.69	304.08	355.76
Cost per acre (including land rent)	289.10	299.05	179.68	172.01	238.30
Profit or loss per acre	376.67	—162.38	68.01	132.07	118.46
Sales of tobacco per lb.	58.0c	15.1c	21.7c	27.9c	33.5c
Cost per pound	25.3c	32.9c	15.8c	15.8c	22.4c
Profit or loss per pound	32.7c	—17.8c	5.9c	12.1c	11.1c
Cost per farm, except for labor	1,289.98	1,390.12	748.29	971.80	1,132.59
Return per farm to labor	3,836.45	—351.42	736.93	1,612.88	1,614.46
Days labor on tobacco per farm	288.7	249.6	207.5	252.4	254.4
Return per 10-hr. days work on tobacco	$13.30	—$1.41	$3.55	$6.40	$6.34
Sales of tobacco per $100.00 cost	230.29	45.70	137.85	176.81	149.71
Cost per acre excluding land rent	190.10	192.39	111.68	101.68	150.93
Net returns to land per acre (all costs included except land rent)	475.67	—55.72	136.01	202.40	205.83

*Certain conditions during this period probably to some extent rendered abnormal the costs and returns of tobacco especially as expressed in money terms.

**Returns and profits for the crops of 1923 and 1924 are not presented since growers who were members of the cooperative marketing association had not received final payment at the time of the preparation of this report.

It is necessary to study this table in detail to secure a proper idea of the profitableness of the tobacco crop. Particular attention is called to the data for 1919 and 1920. The crop in 1919 brought an average of $666 per acre. The cost was $289 per acre, the cost per pound 25.3c giving a profit of $2,900 per farm, $377 per acre and 33c per pound. The next year, 1920, the cost per acre was $299, the receipts per acre $137, the cost per pound 32.9c giving a loss of $162 per acre and approximately 18c per pound. The high price and large profit secured for the

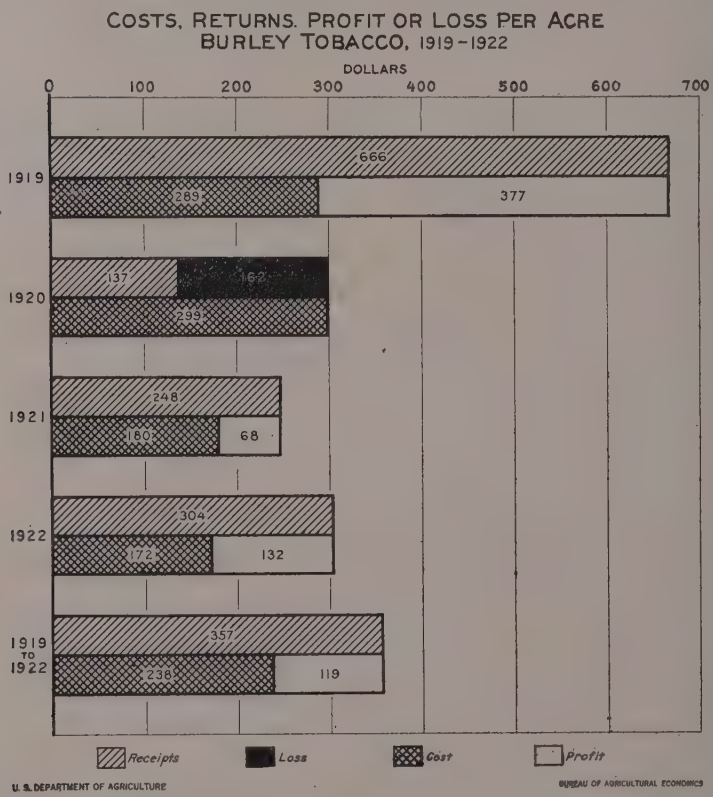

Fig. 6. Costs, returns, profit or loss per acre, burley tobacco. 1919-1922.

1919 crop resulted in an increased production the next year. This in turn, coupled with the inferior quality of much of the 1920 tobacco crop and a general slump in business conditions, resulted in a disastrously low price for the 1920 crop which had been produced at a very high cost. Growers failed by an average of $1,234 to get cost of production for the crop and incurred a loss of $1.41 per ten-hour day on the labor expended on the crop. The average grower probably would have made a profit had he held his production down to a normal acreage, placing

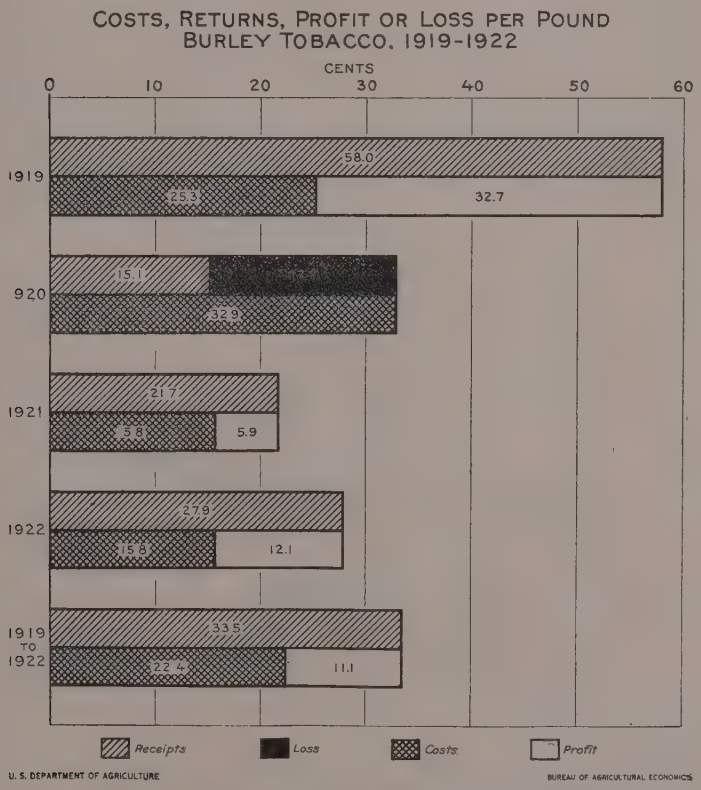

Fig. 7. Costs, returns, profit or loss per pound of burley tobacco. 1919-1922.

emphasis on high quality and holding down production costs. A few farmers did this and made a profit in spite of the great slump in the average price brought by the crop for that year.

It should be explained in this connection that the term profit as used here indicates the difference between the price received for the tobacco and the total cost of the tobacco. However, the fact should be remembered that all the elements in the cost were not cash expenditures but represented the going rate or opportunity rate for the elements of cost. For instance, the charge of $87.37 for land rent was not actually paid but was the figure at which the land would have rented in the spring preceding the planting of the tobacco crop. The average grower who owned the land was credited with $87.37 for the use of his land and in addition secured a profit of $118.46 per acre for the 4 years. He also received the going rate of wages for his labor.

RETURNS TO LABOR

For the year 1920 a loss of $162.38 per acre is indicated on the crop. This does not mean an actual cash loss of that amount. It means that when the operating costs for that year, namely, man labor $116.14, horse work $20.77, barns and sticks $34.46, machinery $2.26, manure and fertilizer $1.96, insurance $10.99, land rent $106.66 and other costs $5.81 are charged, the crop failed by $162.38 per acre to pay the total of these charges. Similarly, an average loss of $1.41 per 10-hour day is shown for the labor expended on the tobacco crop. This means the crop failed by $1.41 per day or $351 per farm of paying the total rent and operating charges. However, when the tobacco was raised on shares, the landlord and tenant each receiving half the crop, omitting the land rental charge the landlord received an average return of $24.49 for the use of his land in 1920 and omitting the labor charge the average tenant received a net return of $1.09 per day for work on the tobacco crop. Table 24 shows the items of cost and returns for tobacco to the tenant who raises the crop on the shares.

TABLE 24.—Tenant's Costs and Returns for an Acre of Burley Tobacco With Land Rented on One-half Share Basis.

Item of Cost	1919	1920	1921	1922	1919-22
Horse work (all)	$19.55	$20.77	$13.59	$13.34	$17.01
Machinery (all)	3.57	2.26	2.45	1.87	2.52
Manure and fertilizer (½ share)	.65	.98	.70	.22	.60
Insurance (½ share)	5.78	5.50	.06	.73	3.28
Other costs (½ share)	2.42	2.90	1.48	1.38	2.07
Total tenant's cost (excluding labor)	31.96	32.41	18.28	17.54	25.48
Man labor costs (all)	121.58	116.14	62.76	57.68	91.21
Tenant's total cost	153.54	148.55	81.04	75.22	116.69
Tenant's share of total receipts	332.88	68.33	123.84	152.04	178.38
Tenant's costs excluding labor	31.96	32.41	18.28	17.54	25.48
Return for labor	300.92	35.92	105.56	134.50	152.90
Days labor expended	37.5	32.8	32.4	29.7	33.0
Return to tenant per 10-hour day worked	$8.02	$1.09	$3.26	$4.53	$4.63

RETURNS TO THE LANDLORD

Table 25 shows the landlord's costs and returns for tobacco when raised for him by a tenant on the half share basis. The average grower produced 7.7 acres of tobacco bringing $2,747 per farm. Half of this amount or $1,373.50 would go to the landlord who after deducting a charge for barns and sticks and other costs would have left $114.14 per acre as pay for the use of his land. This is an excellent rental.

TABLE 25.—Landlord's Costs and Returns Per Acre of Burley Tobacco, Renting to Tenant on One-half Share Basis.

Item of Cost	1919	1920	1921	1922	1919-22
Barn and sticks (all)	$27.71	$34.46	$28.39	$24.12	$28.29
Manure and fertilizer (½ share)	.65	.98	.70	.22	.60
Insurance (½ share)	5.78	5.50	.06	.73	3.28
Other costs (½ share)	2.42	2.90	1.48	1.38	2.07
Use of land (all)	99.00	106.66	68.00	70.33	87.37
Landlord's total costs	135.56	150.50	98.63	96.78	121.61
Landlord's costs (excluding rent)	36.56	43.84	30.63	26.45	34.24
Landlord's share of total receipts	332.88	68.33	123.84	152.04	178.38
Return per acre to landlord for use of land	296.32	24.49	93.21	125.59	144.14

IMPORTANCE OF THE TOBACCO CROP IN FURNISHING EMPLOYMENT TO LABOR

Nearly 40 per cent of the cost of producing burley tobacco consists of the charge for labor. The greater part of this labor is that of the producer and his family. This study showed that an acre of burley tobacco furnished a market for 330 hours of man labor and since the average farm produced 7.7 acres of tobacco the crop gave employment for 254 ten-hour days work during the year. An important function of the tobacco crop is in providing a market for the labor of the producer and his family. The net return per 10-hour day for the labor of producing tobacco when the crop was grown by a tenant was $4.63 as the average for the 4 year period.

COST OF PRODUCING BURLEY TOBACCO IN MASON AND FLEMING COUNTIES

Table 26 shows the cost of producing burley tobacco in Mason and Fleming Counties for the crop year 1922. (See page 485). The figures cover costs on 74 farms growing 354¼ acres and 389,740 pounds. The average yield per acre was 1,100 pounds, the cost per acre $144.04 including land rent and $109.78 with land rent excluded. The average cost per pound was 13.1c. It will be noted by a comparison of this table with table showing costs in the Central Burley territory that Mason and Fleming County farms had higher charges for man labor, manure and fertilizer, and "other costs" and lower charges for horse work, barn and sticks, machinery, insurance and land rent. The last named item $34.26 was less than half as great as the charge in the Central Burley section.

Table 27 shows the man labor and horse work requirements for producing an acre of tobacco in Mason and Fleming Counties.

TABLE 26.—Cost Per Acre for Producing Burley Tobacco in Mason and Fleming Counties, Crop Year 1922 (With and Without Land Rent).

Items	Average Cost	Per Cent of Total Cost
Man labor	$70.82	49.17
Horse work	12.89	8.95
Barns and sticks	17.53	12.17
Machinery	1.76	1.22
Manure and fertilizer*	2.36	1.63
Insurance**	.08	.06
Other costs	4.34	3.01
Total operating cost per acre	$109.78	76.21
Land rent	$34.26	23.79
Total cost per acre	$144.04	100.00

TABLE 27.—Man Labor and Horse Work Required for Producing an Acre of Burley Tobacco—Mason and Fleming Counties.

Operation	Average Hours Man Labor	Per Cent of Total	Average Hours Horse Work	Per Cent of Total
Plant-bed	21.4	5.96	6.82	6.88
Field preparation	15.4	4.48	34.25	34.53
Transplating	27.3	7.52	12.58	12.68
Cultivation with plow	13.0	3.55	14.02	14.14
Cultivation with hoe	22.2	6.08		
Topping. worming, suckering and spraying	66.9	18.35		
Cutting and housing	68.8	18.89	23.67	23.86
Curing	.7	.19		
Stripping	119.2	32.79		
Marketing	8.0	2.19	7.85	7.91
Total	362.9	100.00	99.19	100.00

THE PLACE OF TOBACCO IN THE AGRICULTURE OF CENTRAL KENTUCKY

Central Kentucky farms possess special advantages of soil, climate, markets, labor and other factors for the production of Burley tobacco and these have resulted in making that crop the most important of the section. The studies made by the College

*52 farms out of the 74 farms had manure and fertilizer costs.
**1 farm out of the 74 farms had tobacco insured in field.

of Agriculture indicate that the tobacco crop, except in years when too large an acreage has resulted in overproduction, is more profitable than other money crops for the production of which this region does not possess as good conditions as other regions. This does not mean, however, that it is profitable to make tobacco the exclusive farm enterprise. Other enterprises are needed to fill in the gaps in the farmer's labor program for the year and make full use of the other farm resources. The tobacco grower has time to raise some hay and corn and other crops without interferring seriously with the tobacco crop. Moreover, the rotation of crops and the use of grass and legumes is necessary to keep up the fertility of the land so that it will produce a good grade and a good yield of tobacco. This places pasture and feed crops in the system, and in order to utilize these to advantage some livestock are necessary. It has been found profitable to grow corn, small grain and hay in such acreages as will fit the character of the land and the labor available. As a rule, these crops are incidental to the main money crop and generally should be limited to the amount needed for the feeding of work stock, hogs for home use and in some cases a moderate number of hogs or cattle for sale.

EXAMPLES OF PROFITABLE AND UNPROFITABLE TOBACCO PRODUCTION

A contrast between profitable and unprofitable production is furnished by the cost and income figures of two burley tobacco growers in 1920, the year of low prices. The figures are expressed in round numbers.

The first grower operating a 100-acre farm planted 5 acres of tobacco on land in prime condition. The remainder of the farm was in pasture and feed crops. This grower followed the practice of planning several years ahead for the land upon which he intended to grow tobacco, enriching the prospective tobacco fields by growing legumes and grass and feeding fodder and other roughage on this land and applying available manure to it. This practice put the land in the porous, friable condition necessary for high yields and good quality. Having only a

a moderate acreage to plant he was able to put more time on the preparation and care of the plant bed. As a consequence, he had an abundant supply of vigorous, early plants, and secured a good stand, thus saving the expense of a large amount of resetting. The early setting also was conducive to the production of a bright leaf of fine texture which was in highest demand. The crop yielded 1,600 pounds per acre and sold for an average of 25 cents per pound. Labor costs were kept down, since this grower raised the crop with his own labor supplemented by a small amount of hired labor. The cost per acre was approximately $250, the crop brought approximately $400 an acre yielding the grower a net profit of $750 over all costs, including compensation for his own labor and land at current rates.

The second grower planted 20 acres of tobacco on a 200 acre farm. A considerable part of the acreage planted was on indifferent tobacco land. Because the acreage undertaken was too large for the available labor, sufficient care could not be given to preparation of the plant bed. The plants were late and this resulted in a poor stand and a large expense for resetting. This gave an uneven crop which matured late and produced a low yield of tobacco of inferior color and quality. The crop brought 12 cents a pound or $85 an acre. The cost of production was excessive because a large amount of high priced labor was used. The total cost was $290 an acre, resulting in a loss of $205 an acre or more than $4,000 for the entire crop.

Part III. Costs and Returns for Dark Fire-Cured Tobacco.

Two hundred and sixty-four farms, producing 2,469.4 acres and 1,961,508 pounds of tobacco, were included in the study of the cost of producing dark fire-cured tobacco during the four-year period, 1919-1922. The average acreage of tobacco per farm was 9.4 acres. The total cost per acre was $105.44; the yield per acre was 794 pounds, and the cost per pound 13.3 cents. The items of costs and other factors are shown in Table 28 and Fig. 8.

TABLE 28.—Average Cost of Production Per Acre and Other Factors for Dark Fire-Cured Tobacco, 1919-1922 Inclusive (With and Without Land Rent).*

Item of Cost	Average Cost Per Acre, All Farms	Per Cent of Total Cost (Land rent Included)
Man labor ..... 252 hrs.	$51.88	49.21
Horse work ..... 84.3 hrs.	13.73	13.02
Barns and sticks	8.95	8.49
Machinery	2.08	1.97
Manure and fertilizer	4.00	3.79
Insurance	3.85	3.65
Other costs	4.21	3.99
Total "operating costs" (excluding rent)	88.70	84.12
Use of land	16.74	15.88
Total cost per acre	$105.44	100%
Yield per acre, pounds	794	
Cost per pound**	13.3c	
Price received per acre	$124.48	
Price received per pound	15.7c	
Profit per acre	$19.04	
Profit per pound	2.4c	
Returns per acre above costs other than land rent	$35.78	
Return per hour of labor above costs other than labor	27.9c	

*Price conditions during the period probably rendered abnormal the costs expressed in terms of money.
**Land rent included.

As previously indicated, costs and prices of tobacco during the period from 1919 to 1922, inclusive, the years of the study,

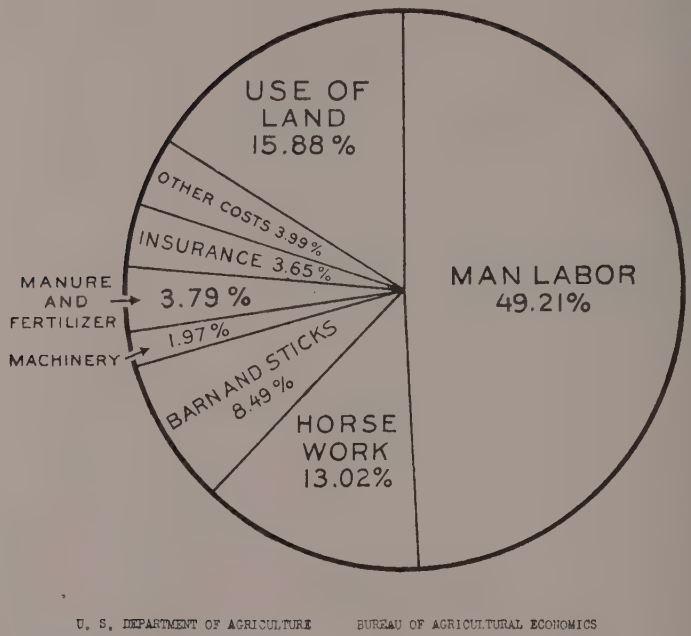

Fig. 8. Distribution of costs of growing and marketing one acre of dark tobacco. 1919–1922.

probably were not representative for a long time period. However, the costs as determined in terms of time and materials, it is believed, are representative of long time conditions in the region.

The variation in the cost per acre is shown in Table 29. In 1919 and 1920 about half the crops studied were produced at a cost ranging between $125 and $150 per acre while in 1921 and 1922 about half the crops were produced at a cost between $75 and $100 per acre.

The variations in cost per acre with land rent excluded are shown in Table 30.

TABLE 29.—Variation in Cost Per Acre for Dark Fire-Cured Tobacco (Including Land Rent).

Cost Per Acre	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
$50— $75			22.5	40.1	20.4			14.5	37.2	17.2
$75—$100		10.2	50.2	51.0	30.7			48.6	52.0	28.1
$100—$125	19.5	35.6	16.7	8.6	16.8	14.6	39.4	23.4	10.0	18.0
$125—$150	56.6	43.8	10.1		23.6	54.7	48.9	13.0		25.5
$150—$175	18.4	8.3	.5	.1	6.5	22.5	8.3	.5	.3	8.0
Over $175	5.5	2.1		.2	2.0	8.2	3.7		.5	3.2

TABLE 30.—Variation in Cost Per Acre for Dark Fire-Cured Tobacco (Excluding Land Rent).

Cost Per Acre	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
$25— $50			7.3	6.0	3.6			4.8	5.5	3.0
$50— $75		12.4	49.4	76.1	41.7		9.9	45.0	73.7	38.0
$75—$100	17.5	13.7	29.4	17.6	18.7	13.7	10.1	32.4	20.0	18.3
$100—$125	54.2	52.5	7.0		23.9	52.5	53.7	8.9		25.1
$125—$150	20.5	18.4	6.9	.1	9.5	23.1	21.6	8.9	.3	11.6
$150—$175	5.8	1.0		.2	1.8	7.4	1.0		.5	2.5
Over $175	2.0	2.0			.8	3.3	3.7			1.5

COST AND DISTRIBUTION OF MAN LABOR

The production of an acre of dark fire-cured tobacco required an average of 25 1/5 days of man labor. The time required for the various operations is shown in Table 31 and Fig. 9. As in the case of burley tobacco, the operation of stripping required the largest amount of labor. Topping, worming, suckering and spraying came second with about 21½% of the total, followed by cutting and housing with 11.1%. The range in the time required in the various operations is shown in the appendix.

The smallest amount of time used by any grower was 154.3 hours per acre; the greatest amount of time, 649.6 hours. Twenty-eight of the 264 growers used less than 200 hours per acre; 174 used 200 to 300 hours; 50 used 300 to 400 hours; and 12 used over 400 hours per acre.

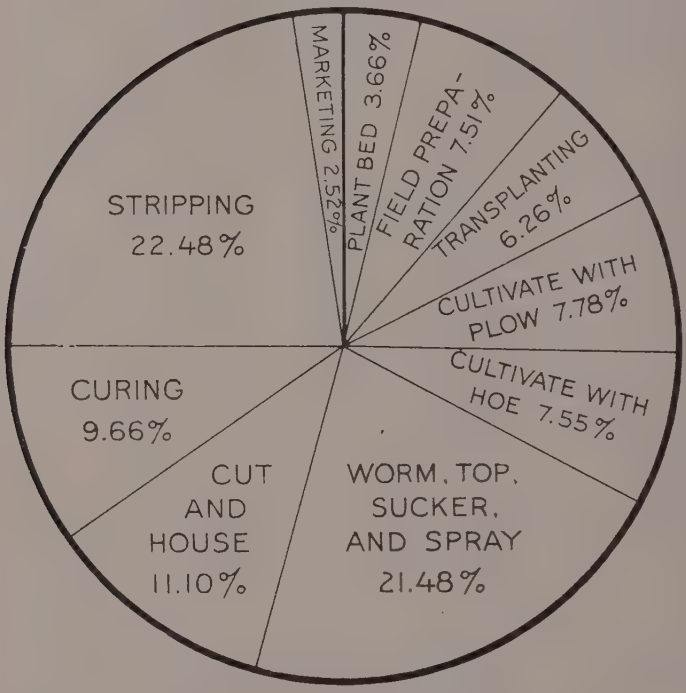

Fig. 9. Relation of labor operations to total labor required in growing and marketing one acre of dark tobacco. 1919-1922.

TABLE 31.—Relation of Labor Operations to Total Labor Required for Dark Fire-Cured Tobacco.

Operations	Average Number of Hours Used Per Acre					Per Cent Total Hours Per Acre Used on Each Operation
	1919	1920	1921	1922	1919-1922 Inclu.	1919-1922 Inclusive
Plant-bed work	9.7	10.7	8.9	8.5	9.22	3.66
Field preparation	21.1	21.3	23.6	15.2	18.93	7.51
Transplanting	15.1	17.1	19.7	14.4	15.77	6.26
Cultivating with plow	22.1	21.2	20.8	17.0	19.60	7.78
Cultivating with hoe	24.9	23.7	20.8	13.1	19.04	7.55
Worming, topping, suckering and spraying	53.4	52.1	58.8	53.8	54.15	21.48
Cutting and housing	28.6	28.6	30.7	26.5	27.98	11.10
Curing	23.7	20.6	29.4	24.5	24.36	9.66
Stripping	57.0	46.4	58.2	59.5	56.64	22.48
Marketing	6.4	5.9	5.2	6.9	6.34	2.52
Total	262.0	247.6	276.1	239.4	252.03	100.00

DISTRIBUTION OF MAN LABOR ON VARIOUS OPERATIONS

Labor Required on Burned Beds. For beds that were burned an average of 11.55 hours of man labor was required, distributed as follows: Getting wood 3.82 hours or 33.1%, breaking and burning bed 5.5 hours or 47.6%, preparing and sowing bed .71 hours or 6.2%, stretching cotton on beds .68 hours or 5.9%, weeding bed .84 hours or 7.3%.

Labor Required on Steamed Beds. For beds that were steamed an average of 5.7 hours of man labor were required, distributed as follows: hauling coal, .52 hours, or 9.0%; breaking and steaming bed, 3.65 hours, or 63.4%; preparing and sowing bed, .63 hours, or 11.0%; placing canvas on bed, .59 hours, or 10.3%; weeding bed, .36 hours, or 6.3%.

Field Preparation. The man labor on field preparation was distributed as follows: breaking, 34.6%; dragging and rolling, 3.3%; harrowing, 4.8%; disking, 17.6%; marking off, 10.8%; distributing fertilizer, 29.1%.

Transplanting. All crops were set by hand. Of the total labor, 72.5% was used for setting and 27.5% for resetting.

Stripping and Marketing. Labor on stripping and marketing was distributed as follows: cutting and hauling wood and sawdust, 8.2%; bulking, 7.4%; stripping, 74.6%; loading, 5.9%; hauling to market, 3.9%.

COST OF HORSE WORK

The horse work required by the various operations is shown in Table 32. This shows an average of 84.3 hours per acre. Field preparation called for the greatest amount of horse work, followed in order by cultivation and housing.

Fifty-six growers used less than 70 hours of horse work per acre; 106 used from 70 to 90 hours; 36 used from 90 to 100 hours; 44 used 100 to 125 hours; and 22 used more than 125 hours per acre. The variation of the amount of horse work, by operations, is shown in the appendix.

TABLE 32.—Relation of Horse Work on Various Operations to Total Horse Work Required in Producing Dark Fire-Cured Tobacco.

Operations	Average Number of Hours Used Per Acre					Per Cent Total Hours Per Acre Used on Each Operation
	1919	1920	1921	1922	1919-1922 Inclu.	1919-1922 Inclusive
Plant bed work	3.1	1.9	2.5	2.8	2.71	3.21
Field preparation	33.5	33.1	35.3	30.6	32.44	38.48
Transplanting	.9	1.3	2.0	.2	0.83	.98
Cultivating with plow	23.2	22.1	21.4	17.6	20.34	24.13
Cutting and housing	13.5	13.5	15.4	16.4	15.02	17.82
Curing	7.7	6.2	7.6	5.3	6.42	7.62
Stripping	.1	.1	.1	*	.06	.07
Marketing	7.0	6.2	5.7	6.5	6.48	7.69
Total	89.0	84.4	90.0	79.4	84.30	100.00

*Less than one-tenth hour per acre.

Horse work on plant bed was distributed 71.1% for hauling wood and 28.9% for breaking bed.

The total horse work used in field preparation was distributed according to the following percentage; breaking land, 40.8%; dragging or rolling, 4.3%; harrowing, 7.8%; disking, 38.7%; marking off, 6.9%; distributing fertilizer, 11.6%.

Horse work classified under curing was used for hauling wood and sawdust for firing and curing the tobacco.

LAND RENT CHARGE

The average land rent charge for the 4-year period was $16.74 per acre as compared with a charge of $87.37 for land rent on burley farms for the same period. It appears that growers of dark fire-cured tobacco do not have to be so discriminating in the selection and preparation of land for growing a satisfactory quality of product as do growers of burley tobacco.

The land rent charge on 66 crops was less than 10 dollars per acre; on 69 crops between $10 and $15; on 61 crops $15 to $20; on 21 crops $25 to $30 and on 6 crops more than $30 an acre.

COST OF BARNS AND STICKS

The average charge for barns and sticks was $8.95 per acre as compared with $28.29 per acre for burley tobacco. For 104 crops the charge was less than $8.00 per acre; for 79 crops from $8 to $10; for 34 crops from $10 to $12; and for 47 crops over $12 per acre.

The items entering into the barn and sticks charge are shown in Table 33.

COST OF MACHINERY

The machinery charge was $2.08 per acre as an average for the 264 crops. For 148 crops the charge was less than $2.00 per acre; on 51 crops it ranged from $2 to $3; on 35 crops from $3 to $4; and on 30 crops it was over $4 per acre.

TABLE 33.—Barn and Stick Charges for Dark Tobacco.*

BARN

Item	Charge	Per Cent of Total Barn Charge	Per Cent of Total Barn and Sticks Charge
Interest	$4.44	53.88	49.61
Depreciation	1.85	22.45	20.67
Taxes	.74	8.98	8.27
Insurance	.93	11.29	10.39
Repairs	.28	3.40	3.13
Total barn charge	$8.24	100.	92.07

STICKS

Item	Charge	Per Cent of Total Sticks Charge	Per Cent of Total Barn and Sticks Charge
Interest	$0.28	39.44	3.13
Depreciation	.32	45.07	3.57
Taxes	.05	7.04	.56
Insurance	.06	8.45	.67
Total stick charge	$0.71	100.	7.93
Total barn and stick charge	$8.95		100.

*The average value of barns was $74 per acre and of sticks $4.80 per acre. The interest rate was 6%, depreciation on barns 2½% and on sticks 5%.

COST OF MANURE AND FERTILIZER

More manure and fertilizer are used on tobacco land in the dark tobacco district than in the burley district. The average charge for the item was $4.00 per acre as compared with $1.19 per acre on the burley farms studied. All but 12 farms had a manure and fertilizer charge.

On 164 crops the charge for manure and fertilizer was less than $5 per acre; on 67 farms it ranged from $5 to $10 and on 21 farms the charge was more than $10 per acre.

COST OF INSURANCE

Because of the heavy hazard due to the method of curing in the barns by open fires under the tobacco, the insurance rates on dark fire-cured tobacco in barns are very high. During the third and fourth years of the study the rates were increased to $4.80

per $100 for 3 months, $6 for 4 months and $7.20 for 5 months. These rates were so high that insurance was carried by only a few growers.

TABLE 34.—Relation of Items of Cost of Producing Dark Fire-Cured Tobacco to Total Cost (Land Rent Included)*

Item	1919	1920	1921	1922	1923	Av.	1919-1922 Inclu.
	Cost Per Acre	Cost Per Acre	Cost Per Acre	Cost Per Acre	Cost Per Acre	Cost Per Acre	% of Total Cost
Man labor	$70.00	$64.01	$43.56	$38.77	$46.50	$51.88	49.21
Horse work	17.85	18.13	13.61	9.58	10.29	13.73	13.02
Barn and stick	10.01	8.90	8.05	8.58	6.43	8.95	8.49
Machinery	2.76	3.05	2.44	1.18	1.29	2.08	1.97
Manure and fertilizer	5.01	5.23	4.79	2.68	1.05	4.00	3.79
Insurance	6.25	6.19	2.00	2.09	1.41	3.85	3.65
Other costs	4.65	4.51	3.87	3.94	2.28	4.21	3.99
Total "operating costs" (excluding rent)	$116.53	$110.02	$78.32	$66.82	$69.25	$88.70	84.12
Use of land	25.23	17.10	11.86	12.81	11.38	16.74	15.88
Total cost per acre	$141.76	$127.12	$90.18	$79.63	$80.63	$105.44	100%

*Price conditions during the period probably rendered abnormal the costs expressed in terms of money.

TABLE 35.—Relation of Items of Cost of Producing Dark Fire-Cured Tobacco to Total Cost, 1919-1922 Inclusive (Land Rent Excluded).

Item	Average Cost Per Acre	Per Cent of "Operating Cost"
Man labor	$51.88	58.49
Horse work	13.73	15.48
Barn and sticks	8.95	10.09
Machinery	2.08	2.34
Manure and fertilizer	4.00	4.51
Insurance	3.85	4.34
Other costs	4.21	4.75
Total "operating cost"	$88.70	100.00

TABLE 36.—Cost Factors in Growing and Marketing One Acre of Dark Fire-Cured Tobacco.

(Average of 4 years, 1919-1922, 264 crops.)

			Per Cent of Total Cost
Cost of Growing Plants:			
Man labor	9.22 hrs.	$1.85	
Horse work	2.71 hrs.	.44	
Implement cost		.07	
Cotton		.79	
Fertilizer		.16	
Fuel for burning plant-beds		.36	
Seed		.07	
Miscellaneous		.02	
Total cost of growing plants		$3.76	3.57
Cost of Growing Tobacco:			
Land rent		$16.74	
Man labor:			
Field preparation	18.93 hrs.	3.63	
Transplanting	15.77 hrs.	4.54	
Cultivation with plow	19.60 hrs.	3.82	
Cultivating with hoe	19.04 hrs.	3.72	
Topping. worming, suckering and spraying	54.15 hrs.	11.58	
Horse work for above operations	53.61 hrs.	8.73	
Implement cost		1.32	
Manure and fertilizer		3.84	
Insecticides		.62	
Hail insurance		1.15	
Miscellaneous		.19	
Total cost of growing tobacco		$59.88	56.79
Cost of Cutting, Housing and Curing:			
Man labor:			
Cutting and housing	27.98 hrs.	$8.14	
Curing	24.36 hrs.	4.72	
Horse work:			
Cutting, housing and curing		3.49	
Machinery cost		.53	
Barn and sticks		8.95	
Fire insurance		2.69	
Wood for curing		1.94	
Total cost of cutting, housing and curing		$30.46	28.89
Stripping:			
Man labor	56.64 hrs.	$8.89	
Horse work	.06 hrs.	.01	
Fuel for stripping		.23	
Total cost of stripping		$9.13	8.66
Marketing:			
Man labor	6.34 hrs.	$0.99	
Horse work	6.48 hrs.	1.06	
Machinery cost	6.48 hrs.	.16	
Total cost of marketing		$2.21	2.09
Total cost		$105.44	100%

OTHER COSTS

Costs other than those enumerated above amounted to $4.21 per acre and ranged from 31 cents to $14.07 per acre. On 76 farms this charge was less than $3.00 per acre; on 104 farms it ranged from $3.00 to $5.00; on 59 farms $5.00 to $7.00; and on 25 farms the charge was more than $7.00 per acre.

TOTAL COST PER ACRE

The cost per acre and the relation of each cost item to the total cost are shown in Table 34 which includes land rent and in table 35 in which the land rent charge is left out. It will be noted from the latter table that man labor and horse work make up about three-fourths of the total cost other than land rent.

In Table 36 and Fig. 10 the costs are classified by items into growing plants, growing tobacco in the field, cutting, housing and curing, stripping, and marketing.

COST PER POUND

The average cost per pound for the 264 crops during the period of the study was 13.3 cents. The cost for the year 1919 was 17.2 cents per pound; for 1920, 14.9 cents; for 1921, 11 cents; and for 1922, 10.7 cents.

The average of the 264 crops for all costs except land rent was 11.2 cents per pound. For 1919 the cost was 14.1 cents per pound; for 1920, 12.8 cents; for 1921, 9.5 cents and 1922, 8.9 cents.

The range in costs per pound during the period of the study is shown in Table 37. The range in costs with land rent excluded is shown in Table 38.

In 1919 half the crop included in the study was produced at a cost of about 16 cents per pound and four-fifths of the crop at a little less than 20 cents per pound. In 1920 half the crop was produced at about 14 cents and four-fifths of the crop at a

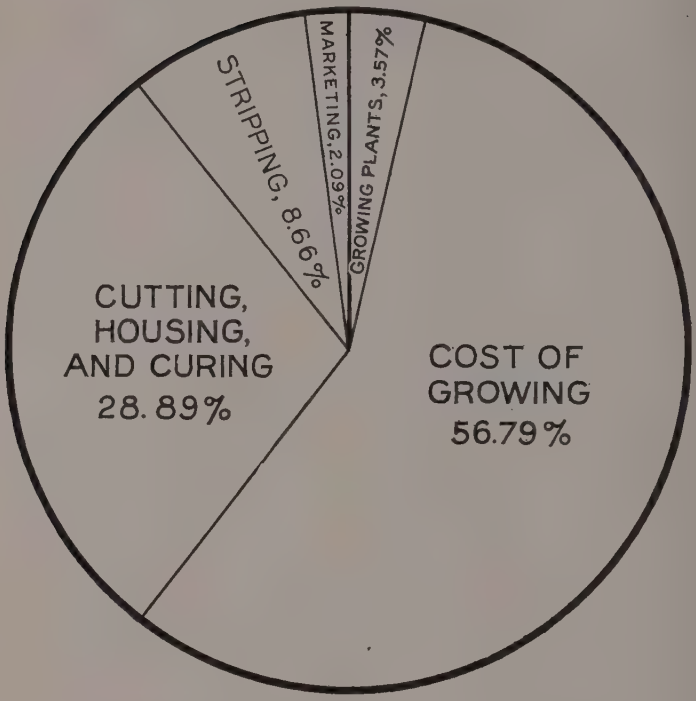

Fig. 10. Cost factors in growing and marketing one acre of dark fire-cured tobacco. 1919–1922.

little more than 16 cents per pound. In 1921 half the crop was produced at a cost of about 10 cents per pound and four-fifths of the crop at a little less than 13 cents per pound. In 1922 half the crop was produced at a little less than 11 cents per pound and four-fifths of the crop between 12 and 13 cents per pound.

Table 39 shows the cumulative percentage of the acreage and production of tobacco produced at various prices which ranged from 7 cents per pound to 38 cents per pound.

TABLE 37.—Variation in Cost Per Pound for Dark Fire-Cured Tobacco.
(Including land rent.)

Cost Per Pound (in Cents)	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Incl.	1919	1920	1921	1922	1919-1922 Incl.
5—10	.80	5.20	46.43	40.43	25.02	1.38	6.24	54.23	45.39	27.7
10.1—15	31.62	56.61	37.01	51.18	44.62	39.91	63.26	36.77	49.04	47.0
15.1—20	38.46	27.54	8.81	7.71	19.34	39.83	24.47	5.74	5.15	18.3
20.1—25	12.96	4.36	6.14	.68	5.39	10.17	3.13	2.88	.42	4.0
25.1—30	12.62	2.20			3.81	7.37	1.03			2.2
30.1—35	3.54	2.87	1.61		1.64	1.34	1.48	.38		.7
35.1 and over		1.22			.18		.39			.1

TABLE 38.—Variation in Cost Per Pound for Dark Fire-Cured Tobacco.
(Excluding land rent.)

Cost Per Pound (in Cents)	Per Cent of Acreage Produced in Each Group					Per Cent of Production Produced in Each Group				
	1919	1920	1921	1922	1919-1922 Incl.	1919	1920	1921	1922	1919-1922 Incl.
5—10	4.28	16.72	61.29	68.75	42.06	6.17	20.85	67.72	73.52	44.80
10.1—15	59.62	62.93	30.45	28.59	42.61	66.76	66.52	28.52	24.82	44.18
15.1—20	19.62	10.66	3.50	2.66	8.66	17.91	7.28	1.80	1.66	7.25
20.1—25	11.10	5.59	3.12		4.35	6.90	3.48	1.60		2.77
25.1—30	5.38	1.04	1.64		1.86	2.26	.55	.36		.80
30.1—35		3.06			.46		1.32			.20
35.1 and over										

TABLE 39.—Variation in Cost Per Pound and Cumulative Percentage of the Crop Produced at Various Costs for Dark Fire-Cured Tobacco (Including Land Rent).*

Cost Per Pound (in Cents)	Cumulative Per Cent of Acreage					Cumulative Per Cent of Production				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
7.4 or less			9.9	1.4	2.02			15.7	2.0	3.08
8.4 or less			14.6	5.1	4.27			20.2	6.6	5.62
9.4 or less	.8	5.2	33.3	22.5	15.44	1.4	6.2	40.9	25.9	17.86
10.4 or less		5.9	48.6	40.4	25.45		7.4	56.6	45.4	28.25
11.4 or less	1.6	12.0	53.1	54.1	33.14	2.5	16.6	62.1	60.1	36.81
12.4 or less	5.5	21.4	64.8	71.4	44.74	8.4	27.0	72.4	76.6	48.40
13.4 or less	15.5	31.5	78.4	83.9	56.36	21.1	38.0	85.7	87.7	60.26
14 4 or less	31.6	44.4	79.8	87.0	64.29	40.6	51.3	87.2	90.8	69.48
15.4 or less	36.5	63.4	83.4	91.6	70.99	45.9	71.3	91.0	94.4	76.29
16.4 or less	42.9	71.3	86.5	95.1	75.91	53.3	78.4	93.1	96.6	80.79
17.4 or less	52.6	76.9	90.1	97.2	80.81	63.4	85.4	95.4	98.1	85.77
18.4 or less	65.6	79.7	91.8	98.8	85.74	75.3	87.3	96.2	99.3	90.08
19.4 or less	68.8	86.5	92.3		87.74	79.0	91.6	96.7		91.89
20.4 or less	72.4	89.3		99.4	89.39	82.6	93.9		99.6	93.39
21.4 or less	72.8	90.3	94.2	100.	90.20	82.9	94.6	97.5	100.	93.86
22.4 or less	79.8		95.3		92.30	88.3		98.0		95.48
23.4 or less	83.4		97.0		93.53	91.1		98.9		96.40
24.4 or less	83.8	91.9			93.89	91.4	95.7			96.66
25.4 or less	88.9	93.7	98.4		95.75	94.6	97.1	99.6		97.92
26.4 or less	89.4	94.7			96.06	95.0	97.5			98.11
27.4 or less	92.4	95.9			97.07	96.5	98.1			98.63
29.4 or less	94.6				97.67	97.8				98.99
30.4 or less	96.4				98.17	98.7				99.26
31.4 or less		96.0			98.33		98.7			99.35
33.4 or less			100.		98.56			100.		99.40
35.4 or less		98.8			98.84		99.6			99.55
37.4 or less	98.2	100.			99.51	99.4	100.			99.81
38.4 or less	100.				100.	100.				100.

*Price conditions during the period probably rendered abnormal the costs expressed in terms of money.

INFLUENCE OF YIELD ON COST

The influence of yield per acre on the cost per pound is shown in Table 40. Low yields per acre gave high costs per pound. The cost per pound decreased as the yield increased, but there were a few crops with very high yields upon which so much time and fertilizer and other costs were expended that the cost per pound was greater than that for farms securing more moderate yields. The yield per acre for the 264 crops averaged 794 pounds, for the four years.

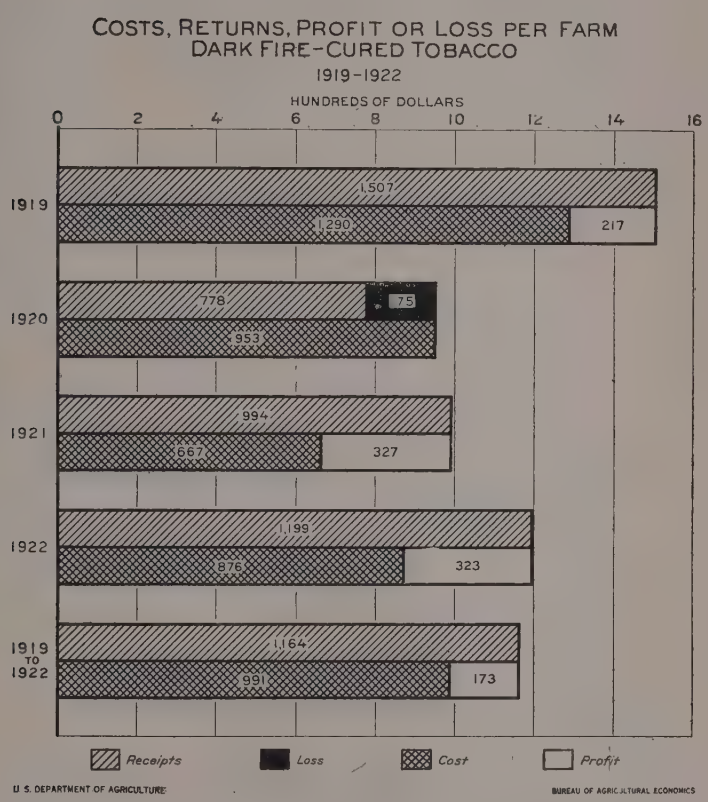

Fig. 11. Costs, returns, profit or loss per farm, dark fire-cured tobacco. 1919-1922.

COSTS, RETURNS AND NET PROFITS FOR DARK FIRE-CURED TOBACCO

Costs and prices in 1919 were abnormally high. In 1920 costs were again very high. Much tobacco that year was reduced in quality by fungus diseases and the price was further depressed in the general post-war business depression. These and other factors probably rendered abnormal the average costs and returns for the period of the study, expressed in terms of money.

The costs and net returns for dark fire-cured tobacco for the four-year period are shown in Table 41 and Figures 11, 12 and

13. The receipts per farm from tobacco were $1,164, the cost $991, the net profit $173. The receipts per acre were $124, the cost $105, the net profit $19. The receipts per pound were 15.7 cents, the cost 13.3 cents, the profit 2.4 cents. For the 237 days work put on the crop there was a net return of $2.79 per day, as an average for the four years. Computed on a farm basis and including all costs except land rent there was an average net return of $35.78 per acre.

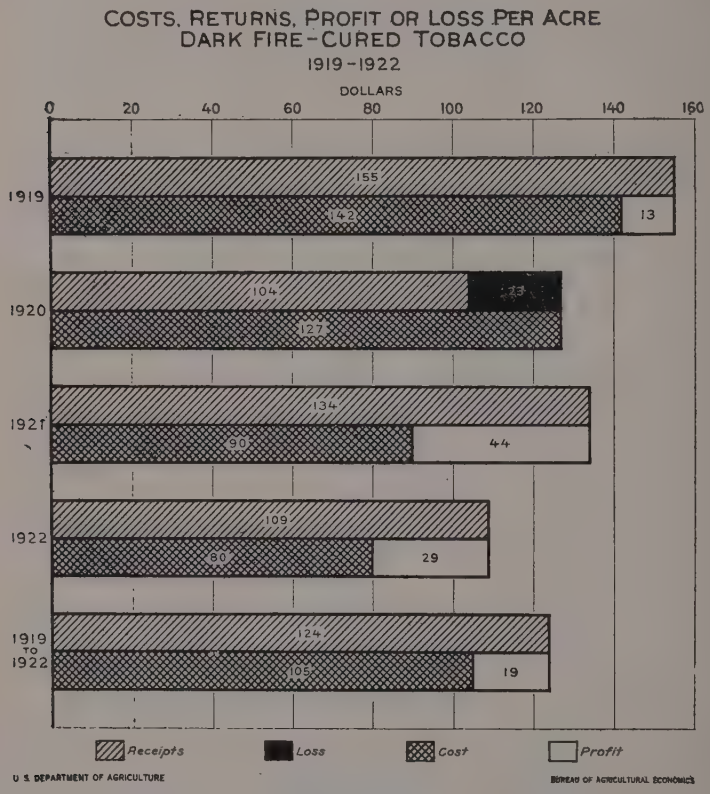

Fig. 12. Costs, returns, profit or loss per acre, dark fire-cured tobacco. 1919-1922.

The landlord's costs and returns when he has the crop raised for him on the share basis are shown in Table 42. As an average for the four years, the landlord would receive $31.26 per acre of land planted to tobacco. The tenant raising tobacco on the share basis would receive $2.24 per 10-hour day of work expended on tobacco (See Table 43).

As in the case of burley tobacco, the crop of 1920 was produced at a loss. This loss was $175 per farm, $24 per acre and 2.8 cents per pound.

TABLE 40.—Influence of Yield on Cost of Producing Dark Fire-Cured Tobacco

Pounds Per Acre	Per Cent Total Acres					Cost Per Acre in Dollars					Cost Per Pound in Cents				
	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.	1919	1920	1921	1922	1919-1922 Inclu.
300— 600	21.8	14.1	19.8	21.7	20.3	$127.31	$110.57	$76.45	$75.62	$94.71	26.7	25.1	18.2	13.8	18.9
600— 900	37.1	49.7	35.1	64.3	50.4	136.57	119.94	79.53	77.74	96.13	18.0	15.2	10.9	10.3	12.7
900—1200	35.0	26.2	39.5	13.7	25.1	147.46	135.01	104.84	86.57	121.68	14.5	13.6	10.3	8.7	12.0
1200—1500	4.5	6.7	5.6		3.1	182.80	142.23	101.95		148.13	14.1	10.8	7.2		11.1
1500—1800	1.2	3.3		0.3	1.0	188.24	213.28		170.55	197.97	12.1	13.8		10.3	12.7
Over 1800	0.4				.1	308.69				308.69	16.4				16.4

TABLE 41.—Costs, Returns and Profit or Loss Per Acre for Dark Tobacco.*

(Computed on Farm Basis.)

	1919	1920	1921	1922	1919-22
Number of crops studied	70	50	47	97	264
Number acres tobacco	679.0	375.9	348.9	1,065.6	2,469.4
Acres tobacco per farm	9.7	7.5	7.4	11.0	9.4
Yield per acre (pounds)	825	855	819	745	794
Sales of tobacco per farm	$1,506.97	$778.29	$993.38	$1,198.99	$1,164.37
Cost per farm	1,290.02	953.40	667.33	875.93	991.14
Profit or loss per farm	216.05	—175.11	326.05	323.06	173.23
Sales of tobacco per acre	155.36	103.52	133.82	109.14	124.48
Cost per acre	141.76	127.12	90.18	79.63	105.44
Profit or loss per acre	13.60	—23.60	43.64	29.51	19.04
Sales of tobacco per lb.	18.8c	12.1c	16.3c	14.7c	15.7c
Cost per pound	17.2c	14.9c	11.0c	10.7c	13.3c
Profit or loss per pound	1.6c	—2.8c	5.3c	4.0c	2.4c
Cost per farm except for labor	$611.02	$473.32	$344.99	$449.46	$503.47
Return per farm to labor	895.95	304.97	648.38	749.53	660.90
Days labor on tobacco per farm	254.1	185.7	204.3	263.3	236.9
Return per days work on tobacco	$3.53	$1.64	$3.17	$2.85	$2.79
Sales of tobacco per $100.00 cost	109.59	81.63	148.39	137.06	117.96
Return per acre for use of land	38.83	—6.50	55.50	42.32	35.78

*Price conditions during this period probably to some extent rendered abnormal the costs and returns of tobacco especially as expressed in money terms.

TABLE 42.—Landlord's Costs and Returns for an Acre of Dark Fire-Cured Tobacco Renting to Tenant on One-Third Share Basis.

	1919	1920	1921	1922	1919-22
Barn and sticks (all)	$10.01	$8.90	$8.05	$8.58	$8.95
Insurance (⅓ share)	2.08	2.06	.67	.70	1.28
Use of land (all)	25.23	17.10	11.86	12.81	16.74
Landlord's total cost	37.32	28.06	20.58	22.09	26.97
Landlord's costs excluding rent	12.09	10.96	8.72	9.28	10.23
Landlord's share of total receipts	51.79	34.51	44.61	36.38	41.49
Landlord's return per acre	39.70	23.55	35.89	27.10	31.26

TABLE 43.—Tenant's Costs and Returns for an Acre of Dark Fire-Cured Tobacco Renting Land on Two-Thirds Share Basis.

	1919	1920	1921	1922	1919-22
Horse work (all)	$17.85	$18.13	$13.61	$9.58	$13.73
Machinery (all)	2.76	3.05	2.44	1.18	2.08
Manure and fertilizer (all)	5.01	5.23	4.79	2.68	4.00
Insurance (⅔ share)	4.17	4.13	1.33	1.39	2.57
Other costs (all)	4.65	4.51	3.87	3.94	4.21
Man labor costs (all)	70.00	64.01	43.56	38.77	51.88
Tenant's total cost	104.44	99.06	69.60	57.54	78.47
Tenant's cost excluding labor	34.44	35.05	26.04	18.77	26.59
Tenant's share of total receipts	103.57	69.01	89.21	72.76	82.99
Return for labor	69.13	33.96	63.17	53.99	56.40
Days labor expended	26.2	24.8	27.6	23.9	25.2
Tenant's return per 10-hour day worked	2.64	1.37	2.29	2.26	2.24

COMPARISON OF 10 FARMS HAVING HIGHEST PROFITS PER POUND WITH 10 FARMS HAVING LOWEST PROFITS PER POUND

The various factors for the 10 farms having the highest profits per pound were compared with the same factors for the 10 farms having the smallest profits per pound, and are shown in Table 44. The two most influential factors for profits are shown to be the yield per acre and the price which the tobacco brought. In each of the four years the most profitable production was associated with an expenditure of labor per acre greater than the average. In three years out of four the total operating costs were larger on the farms which made the highest profits per pound. Soil treatment and cultural and handling methods for improving the yield and quality of dark fire-cured tobacco have been studied by the Department of Agronomy of the Kentucky Agricultural Experiment Station and may be obtained upon request.

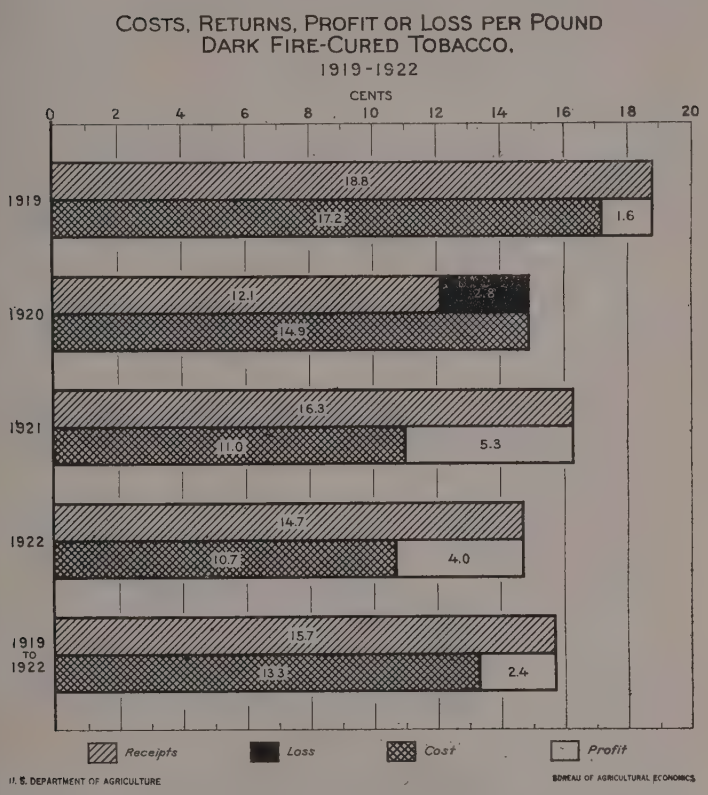

Fig. 13. Costs, returns, profit or loss per pound, dark fire-cued tobacco. 1919–1922.

THE PLACE OF TOBACCO IN THE AGRICULTURE OF WESTERN KENTUCKY

It has been shown that the tobacco crop gave a profit in three out of four years for which costs and returns were studied. This profit is not as large as that secured by growers of burley tobacco. However, an important consideration in growing dark tobacco as in growing burley tobacco is the fact that the crop is an intensive one and furnishes productive work for family labor. Thus the average grower raised 9.4 acres of tobacco which fur-

TABLE 44.—Comparison of Factors of 10 Dark Fire-Cured Tobacco Farms Having Highest Profit Per Pound With 10 Farms Having Lowest Profit Per Pound, and Average.

Item	Average Per Acre All Farms All Years	1919		1920		1921		1922	
		10 Highest Profit	10 Lowest Profit	10 Highest Profit	10 Lowest Profit	10 Highest Profit	10 Lowest Profit	10 Highest Profit	10 Lowest Profit
Man labor { hours	252.0	260.9	245.2	276.9	242.0	297.5	285.3	302.8	259.6
{ cost	$51.88	$70.54	$64.96	$69.67	$65.06	$44.56	$45.99	$47.16	$40.10
Horse work { hours	84.3	85.5	93.0	99.7	94.7	84.7	106.7	99.3	94.3
{ cost	$13.73	$17.10	$18.60	$21.22	$20.82	$12.83	$15.79	$11.92	$11.31
Barns and sticks cost	8.95	10.29	7.97	6.70	11.98	10.28	7.34	7.79	10.37
Machinery cost	2.08	3.21	3.05	3.30	2.20	2.49	3.08	1.40	1.25
Manure and fertilizer cost	4.00	5.31	5.89	5.09	5.89	4.51	4.18	3.40	3.72
Insurance cost	3.85	6.88	5.73	7.07	5.34	.44	1.43	2.70	1.52
Other costs	4.21	5.74	3.81	6.08	3.66	3.25	3.24	4.74	3.96
Total "operating costs" (land rent excluded)	88.70	119.07	110.01	119.13	114.95	78.36	81.05	79.11	72.23
Use of land	16.74	28.10	22.51	13.81	18.99	11.26	11.74	12.97	9.78
Total cost per acre	$105.44	$147.17	$132.52	$132.94	$133.94	$89.62	$92.79	$92.08	$82.01
Yield per acre, pounds	794.	1,083.7	493.8	1,066.9	535.2	1,082.9	483.0	969.9	502.1
Cost per pound*	13.3c	13.6c	26.8c	12.6c	25.0c	8.3c	19.2c	9.5c	16.3c
Price received per acre	$124.48	$279.48	$48.69	$165.07	$33.12	$214.58	$51.40	$220.26	$52.66
Price received per pound	15.7c	25.8c	9.9c	15.6c	6.2c	19.8c	10.6c	22.7c	10.5c
Profit or loss per acre*	$19.04	$132.31	—$83.83	$32.13	—$100.82	$124.96	— $41.39	$128.18	—$29.35
Profit or loss per pound*	2.4c	12.2c	—16.9c	3.0c	—18.8c	11.5c	—8.6c	13.2c	—5.8c

*Land rent included.

nished 237 days work during the year returning an average wage of $2.79 a day.

Climate, soils, markets, and labor skilled in the production of the crop are favorable factors, and yet the experience of growers in the past indicates that there is a constant tendency to overproduce the crop resulting, from time to time, in low prices and loss to growers. When tobacco is grown on a reasonable acreage with methods which secure a crop of good quality and yield, produced at a moderate cost, it provides a profitable enterprise. However, it is important that growers shall use a diversified system in which other crops and livestock supplement the tobacco crop.

SUMMARY OF DATA ON COSTS AND RETURNS FOR TOBACCO FOR THE TWO REGIONS

Certain conditions beyond control probably to some extent prevented the costs and returns expressed in terms of money as shown by this study from being typical for a long-time period. The first year of the study was one of an abnormally high price for tobacco and high cost of production. The second year was one of very high costs followed by the general post-war price slump which began before the crop was sold. During this year also the quality of much of the tobacco was badly damaged from fungus diseases. The new plan of cooperative marketing which was put into effect in the Burley Tobacco District during the third and fourth years of the study and in the Dark Tobacco District during the fourth year had an effect upon the returns and profits of tobacco during those years. The costs expressed in terms of labor and materials were not greatly affected by these unusual conditions. This report presents the data both in terms of money and in terms of time and materials.

The average acreage of tobacco on the farms included in the study was 7.7 acres in the Burley Tobacco District and 9.4 acres in the Dark Tobacco District.

In the Burley Tobacco District the production of an acre of tobacco required 330.4 hours of human labor and 97.6 hours of horse work. In the Dark District 252.0 hours of human labor and 84.3 hours of horse work were required.

The total cost per acre, including land rent, in the Burley Tobacco District averaged $238.30. The cost, not including land rent, was $150.93 per acre. The cost in the Dark Tobacco District averaged $105.44, including land rent, and $88.70, not including land rent.

The average cost per pound in the Burley Tobacco District was 22.4 cents, including land rent, and 14.2 cents, not including land rent. The average cost in the Dark Tobacco District was 13.3 cents per pound, including land rent, and 11.2 cents, not including land rent.

The average yield per acre was 1,064 pounds in the Burley District and 794 pounds in the Dark District.

Of the total cost in the Burley District, man labor constituted 38.3 per cent, land rent 36.7 per cent, barns and sticks 11.9 per cent, horse work 7.2 per cent, insurance 2.8 per cent, and other costs 3.1 per cent. Without land rent as a cost, man labor and horse work constituted approximately 72 per cent and the other items 28 per cent of the total cost.

In the Dark Tobacco area man labor constituted 49.2 per cent of the total cost, land rent 15.9 per cent, horse work 13.0 per cent, barns and sticks 8.5 per cent, insurance 3.6 per cent, and other items 9.8 per cent. Excluding land rent as a cost, man labor and horse work amounted to approximately 74 per cent and the other items 26 per cent of the total cost.

Computed on the farm basis and with all factors of cost charged except labor, Burley tobacco, as an average for the 4 years, showed a net return of $6.34 per 10-hour day's work put on it. With all factors of cost charged except land the crop showed a net return of $205.83 per acre. Dark Fire-Cured tobacco showed a return of $2.79 per day's work and a net return of $35.78 per acre.

Receipts from Burley tobacco, as an average for the four years, were $2,747 per farm. The cost was $1,835 and the profit $912 per farm. Receipts per acre were $356. When the cost of $238 per acre was subtracted from that figure there remained a profit of $118 per acre. The price received per pound was

33.5 cents. This figure diminished by the cost of 22.4 cents per pound left a profit of 11.1 cents as an average for the four years.

The high price and large profit secured for the 1919 Burley tobacco crop were followed by heavy overproduction the following year. For the 1920 crop, growers failed by an average of $1,234 per farm of securing the cost of production and they incurred a loss of $1.41 per 10-hour day of labor expended on the crop.

The tobacco crop, except in years when too large an acreage resulted in overproduction, has been shown to be the most profitable money crop for farms having conditions favorable for its production and marketing. However, a diversity of enterprises in connection with the tobacco crop is necessary for the full utilization of the grower's land, labor and capital and for the best profits.

The largest factors affecting costs and profits from tobacco production in both districts are shown to be the yield and price received. The lowest yields per acre were associated with highest costs per pound and the highest yields per acre with the lowest costs per pound. A study of the methods and results of the farmers from whom the data were obtained indicates the especial importance of the following factors for satisfactory yields and prices: Limitation of the tobacco acreage to land which has been made ready by correct cropping and handling in years prior to the growing of the crop. Painstaking and skillful work in the production and housing of the crop and in grading, stripping and marketing it. The most successful growers expended more time and labor on the crop than the average. The wide differences in price received appear to be in considerable measure due to differences in care used in handling the crop.

Appendix—Part IV.

TABLE I.—Man Labor on Plant Bed—Burley Tobacco.
(Average 17.38 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—10	12	14.8	10	13.5	9	21.0	22	24.7	53	18.5
10.1—20	30	37.0	30	40.5	23	53.4	41	46.1	124	43.2
20.1—30	23	28.4	22	29.7	6	14.0	20	22.5	71	24.8
30.1—40	10	12.3	9	12.2	3	7.0	4	4.5	26	9.0
40.1 and over	6	7.5	3	4.1	2	4.6	2	2.2	13	4.5
	81	100	74	100	43	100	89	100	287	100

TABLE II.—Man Labor on Field Preparation—Burley Tobacco.
(Average 19.32 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—10	3	3.7	7	9.5	2	4.6	8	9.0	20	7.0
10.1—20	41	50.6	38	51.3	22	51.2	57	64.0	158	55.0
21.0—30	14	17.3	12	16.2	14	32.6	15	16.9	55	19.1
30.1—40	4	4.9	6	8.1	1	2.3	5	5.6	16	5.6
40.1—50	5	6.2	3	4.1	3	7.0	3	3.4	14	4.9
50.1 and over	14	17.3	8	10.8	1	2.3	1	1.1	24	8.4
	81	100	74	100	43	100	89	100	287	100

TABLE III.—Man Labor on Transplating—Burley Tobacco.
(Average 30.84 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
5—15			4	5.4	2	4.6	5	5.6	11	3.8
15.1—25	7	8.6	17	23.0	16	37.2	45	50.6	85	29.6
25.1—35	19	23.4	29	39.2	13	30.2	29	32.6	90	31.4
35.1—45	25	30.9	17	23.0	6	14.0	6	6.7	54	18.8
45.1—55	20	24.7	6	8.1	2	4.7	4	4.5	32	11.2
55.1 and over	10	12.4	1	1.3	4	9.3			15	5.2
	81	100	74	100	43	100	89	100	287	100

TABLE IV.—Man Labor on Cultivation With Plow—Burley Tobacco.
(Average 12.97 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—5	3	3.7	4	5.4	4	9.3	2	2.3	13	4.5
5.1—10	21	25.9	19	25.7	9	20.9	30	33.7	79	27.5
10.1—15	31	38.3	33	44.6	12	27.9	31	34.8	107	37.3
15.1—20	13	16.1	12	16.2	12	27.9	14	15.7	51	17.8
20.1—25	6	7.4	4	5.4	3	7.0	10	11.2	23	8.0
25.1 and over	7	8.6	2	2.7	3	7.0	2	2.3	14	4.9
	81	100	74	100	43	100	89	100	287	100

TABLE V.—Man Labor on Cultivation With Hoe—Burley Tobacco.
(Average 23.69 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—10			5	6.8	4	9.3	32	36.0	41	14.3
10.1—20	14	17.3	31	41.9	16	37.2	30	33.7	91	31.7
20.1—30	26	32.1	18	24.3	9	20.9	14	15.7	67	23.3
30.1—40	18	22.2	16	21.6	7	16.3	4	4.5	45	15.7
40.1—50	11	13.6	3	4.1	6	14.0	4	4.5	24	8.4
50.1 and over	12	14.8	1	1.3	1	2.3	5	5.6	19	6.6
	81	100	74	100	43	100	89	100	287	100

TABLE VI.—Man Labor on Topping, Worming, Suckering and Spraying—Burley Tobacco.
(Average 42.35 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—15	12	14.8	3	4.1	4	9.3	3	3.3	22	7.6
15.1—30	19	23.4	20	27.0	11	25.6	33	37.1	83	29.0
30.1—45	23	28.4	29	39.2	7	16.3	22	24.7	81	28.2
45.1—60	14	17.3	15	20.2	11	25.6	17	19.1	57	19.9
60.1—75	9	11.1	4	5.4	4	9.3	7	7.9	24	8.4
75.1 and over	4	5.0	3	4.1	6	13.9	7	7.9	20	6.9
	81	100	74	100	43	100	89	100	287	100

TABLE VII.—Man Labor on Cutting And Housing—Burley Tobacco.
(Average 58.45 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
15—30	3	3.7	1	1.3	6	14.0	10	11.2	20	6.9
30.1—45	20	24.7	8	10.8	8	18.6	25	28.1	61	21.3
45.1—60	22	27.2	20	27.0	9	20.9	31	34.9	82	28.6
60.1—75	22	27.2	29	39.2	7	16.3	14	15.7	72	25.1
75.1—90	7	8.6	9	12.2	5	11.6	6	6.7	27	9.4
90.1 and over	7	8.6	7	9.5	8	18.6	3	3.4	25	8.7
	81	100	74	100	43	100	89	100	287	100

TABLE VIII.—Man Labor on Curing—Burley Tobacco.
(Average .77 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0	79	97.5	64	86.4	41	95.3	56	62.9	240	83.6
.1— 5	2	2.5	5	6.8			31	34.8	38	13.3
5.1—10			5	6.8	2	4.7	2	2.3	9	3.1
	81	100	74	100	43	100	89	100	287	100

TABLE IX.—Man Labor on Stripping—Burley Tobacco.
(Average 117.10 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
30—60	3	3.7	8	10.8	9	20.9	4	4.5	24	8.4
60.1—90	15	18.5	15	20.3	7	16.3	18	20.2	55	19.2
90.1—120	19	23.5	16	21.6	13	30.2	37	41.6	85	29.6
120.1—150	27	33.3	19	25.7	8	18.6	23	25.9	77	26.8
150.1—180	11	13.6	11	14.9	3	7.0	2	2.2	27	9.4
180.1 and over	6	7.4	5	6.7	3	7.0	5	5.6	19	6.6
	81	100	74	100	43	100	89	100	287	100

TABLE X.—Man Labor on Marketing—Burley Tobacco.
(Average 7.48 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—5	12	14.8	13	17.6	19	44.2	21	23.6	65	22.6
5.1—10	55	67.9	37	50.0	17	39.5	51	57.3	160	55.8
10.1—15	13	16.1	17	22.9	5	11.6	16	18.0	51	17.8
15.1 and over	1	1.2	7	9.5	2	4.7	1	1.1	11	3.8
	81	100	74	100	43	100	89	100	287	100

TABLE XI.—Horse Work on Plant Bed—Burley Tobacco.
(Average 5.11 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0	1	1.2	2	2.7	3	7.0	3	3.4	9	3.1
.1—5	43	53.1	35	47.3	24	55.8	35	39.3	137	47.8
5.1—10	28	34.6	21	28.4	10	23.3	34	38.2	93	32.4
10.1—15	4	4.9	10	13.5	6	13.9	13	14.6	33	11.5
15.1 and over	5	6.2	6	8.1			4	4.5	15	5.2
	81	100	74	100	43	100	89	100	287	100

TABLE XII.—Horse Work on Field Preparation—Burley Tobacco.
(Average 37.67 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—20	5	6.2	3	4.1	1	2.3	8	9.	17	5.9
20.1—40	37	45.6	45	60.8	22	51.2	45	50.6	149	51.9
40.1—60	22	27.2	19	25.6	14	32.6	25	28.1	80	27.9
60.1—80	12	14.8	4	5.4	5	11.6	7	7.8	28	9.8
80.1—100	5	6.2	3	4.1	1	2.3	4	4.5	13	4.5
	81	100	74	100	43	100	89	100	287	100

TABLE XIII.—Horse Work on Transplating—Burley Tobacco.
(Average 10.61 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0	24	29.6	21	28.4	6	14.	7	7.9	58	20.2
.1—5	11	13.6	11	14.9	3	7.	3	3.4	28	9.8
5.1—10	20	24.7	18	24.3	11	25.6	22	24.7	71	24.7
10.1—15	19	23.5	14	18.9	13	30.2	38	42.7	84	29.3
15.1 and over	7	8.6	10	13.5	10	23.2	19	21.3	46	16.
	81	100	74	100	43	100	89	100	287	100

TABLE XIV.—Horse Work on Cultivation With Plow—Burley Tobacco.
(Average 14.86 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		Inclusive 1919–1922	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—5	3	3.7	3	4.1	1	2.3	1	1.1	8	2.8
5.1—10	15	18.5	16	21.6	10	23.3	28	31.5	69	24.0
10.1—15	33	40.7	30	40.5	10	23.3	24	27.	97	33.8
15.1—20	17	21.	18	24.3	14	32.6	22	24.7	71	24.7
20.1—25	5	6.2	5	6.8	3	6.9	5	5.6	18	6.3
25.1 and over	8	9.9	2	2.7	5	11:6	9	10.1	24	8.4
	81	100	74	100	43	100	89	100	287	100

TABLE XV.—Horse Work on Cutting and Housing—Burley Tobacco.
(Average 22.04 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—10	6	7.4	3	4.	6	14.	5	5.6	20	7.
10.1—20	40	49.4	29	39.2	25	58.1	32	36.	126	43.8
20.1—30	27	33.3	27	36.5	7	16.3	32	36.	93	32.4
30.1—40	5	6.2	8	10.8	4	9.3	15	16.8	32	11.2
40.1 and over	3	3.7	7	9.5	1	2.3	5	5.6	16	5.6
	81	100	74	100	43	100	89	100	287	100

TABLE XVI.—Horse Work on Curing—Burley Tobacco.
(Average .04 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0	80	98.8	70	94.6	43	100	89	100	282	98.3
.1–5	1	1.2	4	5.4					5	1.7
	81	100	74	100	43	100	89	100	287	100

TABLE XVII.—Horse Work on Stripping—Burley Tobacco.
(Average .15 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0			65	87.8	43	100	88	98.9	196	95.1
.1–5			7	9.5					7	3.4
5.1 and over			2	2.7			1	1.1	3	1.5
			74	100	43	100	89	100	287	100

TABLE XVIII.—Horse Work on Marketing—Burley Tobacco.
(Average 7.10 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0–5			26	35.1	17	39.5	21	23.6	64	31.1
5.1–10			25	33.8	21	48.9	51	57.3	97	47.1
10.1–15			16	21.6	4	9.3	16	18.	36	17.5
15.1 and over			7	9.5	1	2.3	1	1.1	9	4.3
			74	100	43	100	89	100	287	100

TABLE XIX.—Man Labor on Plant Bed—Dark Fire-Cured Tobacco.
(Average 9.22 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—5	9	12.9	7	14.0	8	17.0	18	18.6	42	15.9
5.1—10	27	38.6	14	28.0	17	36.1	38	39.2	96	36.3
10.1—15	21	30.0	14	28.0	13	27.7	27	27.8	75	28.4
15.1—20	3	11.4	8	16.0	6	12.8	8	8.2	30	11.4
20.1 and over	5	7.1	7	14.0	3	6.4	6	6.2	21	8.0
	70	100	50	100	47	100	97	100	264	100

TABLE XX.—Man Labor on Field Preparation—Dark Fire-Cured Tobacco.
(Average 18.93 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—10	2	2.9	5	10.0			8	8.2	15	5.7
10.1—20	29	41.4	17	34.0	16	34.0	59	60.9	121	45.8
20.1—30	24	34.3	16	32.0	14	29.8	19	19.6	73	27.7
30.1—40	12	17.1	9	18.0	11	23.4	8	8.2	40	15.1
40.1 and over	3	4.3	3	6.0	6	12.8	3	3.1	15	5.7
	70	100	50	100	47	100	97	100	264	100

TABLE XXI.—Man Labor on Transplating—Dark Fire-Cured Tobacco.
(Average 15.77 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
5—10	5	7.1	3	6.0	2	4.3	7	7.2	17	6.4
10.1—15	31	44.3	18	36.0	13	27.6	53	54.6	115	43.6
15.1—20	26	37.1	20	40.0	12	25.5	30	31.0	88	33.4
20.1—25	6	8.6	5	10.0	10	21.3	6	6.2	27	10.2
25.1 and over	2	2.9	4	8.0	10	21.3	1	1.0	17	6.4
	70	100	50	100	47	100	97	100	264	100

TABLE XXII.—Man Labor on Cultivation With Plow—Dark Fire-Cured Tobacco.
(Average 19.60 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
5—10	4	5.7			1	2.1	6	6.2	11	4.2
10.1—15	5	7.1	4	8.0	3	6.4	32	33.0	44	16.7
15.1—20	25	35.7	19	38.0	16	34.0	29	30.0	89	33.7
20.1—25	17	24.3	13	26.0	13	27.7	14	14.4	57	21.6
25.1—30	9	12.9	10	20.0	6	12.8	7	7.2	32	12.1
30.1 and over	10	14.3	4	8.0	8	17.0	9	9.2	31	11.7
	70	100	50	100	47	100	97	100	264	100

TABLE XXIII.—Man Labor on Cultivation With Hoe—Dark Fire-Cured Tobacco.
(Average 19.04 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—10	4	5.7	4	8.0	9	19.1	35	36.0	52	19.7
10.1—20	24	34.3	18	36.0	9	19.1	42	43.3	93	35.3
20.1—30	25	35.7	15	30.0	18	38.4	12	12.4	70	26.5
30.1—40	11	15.7	10	20.0	6	12.8	5	5.2	32	12.1
40.1 and over	6	8.6	3	6.0	5	10.6	3	3.1	17	6.4
	70	100	50	100	47	100	97	100	264	100

TABLE XXIV. Man Labor on Topping, Worming, Suckering and Spraying Dark Fire-Cured Tobacco.
(Average 54.15 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
15—30	4	5.7	6	12.0	2	4.2	2	2.1	14	5.3
30.1—45	22	31.4	13	26.0	4	8.5	20	20.6	59	22.3
45.1—60	21	30.0	16	32.0	16	34.1	45	46.4	98	37.1
60.1—75	18	25.7	8	16.0	19	40.4	21	21.6	66	25.0
75.1 and over	5	7.2	7	14.0	6	12.8	9	9.3	27	10.3
	70	100	50	100	47	100	97	100	264	100

TABLE XXV.—Man Labor on Cutting and Housing—Dark Fire-Cured Tobacco.
(Average 27.98 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
7.5—15	4	5.7	2	4.	27	57.4	10	10.3	43	16.3
15.1—22.5	16	22.9	12	24	13	27.7	25	25.8	66	25.0
22.6—30	27	38.6	17	34	4	8.5	46	47.4	94	35.6
30.1—37.5	11	15.7	13	26	2	4.3	9	9.3	35	13.3
37.6—45	8	11.4	4	8	1	2.1	6	6.2	19	7.2
45.1 and over	4	5.7	2	4			1	1.0	7	2.6
	70	100	50	100	47	100	97	100	264	100

TABLE XXVI.—Man Labor on Curing—Dark Fire-Cured Tobacco.
(Average 24.36 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—15	9	13.0	15	30.0	4	8.5	13	13.4	41	15.5
15.1—30	43	61.4	26	52.0	15	31.9	43	44.4	127	48.2
30.1—45	12	17.1	5	10.0	20	42.6	26	26.8	63	23.8
45.1—60	5	7.1	4	8.0	4	8.5	11	11.3	24	9.1
60.1 and over	1	1.4			4	8.5	4	4.1	9	3.4
	70	100	50	100	47	100	97	100	264	100

TABLE XXVII. Man Labor on Stripping—Dark Fire-Cured Tobacco.
(Average 56.64 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
10—30	7	10.0	10	20.0	6	12.8			23	8.7
30.1—50	19	27.1	18	36.0	12	25.5	32	33.0	81	30.8
50.1—70	28	40.0	17	34.0	20	42.6	43	44.3	108	40.8
70.1—90	14	20.0	3	6.0	5	10.6	17	17.5	39	14.8
90.1 and over	2	2.9	2	4.0	4	8.5	5	5.2	13	4.9
	70	100	50	100	47	100	97	100	264	100

TABLE XXVIII.—Man Labor on Marketing—Dark Fire-Cured Tobacco.
(Average 6.34 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—5	19	27.2	24	48.0	21	44.7	25	25.8	89	33.8
5.1—10	49	70.0	21	42.0	22	46.8	58	59.8	150	56.8
10.1—15	1	1.4	4	8.0	4	8.5	12	12.4	21	7.9
15.1 and over	1	1.4	1	2.0			2	2.0	4	1.5
	70	100	50	100	47	100	97	100	264	100

TABLE XXIX.—Horse Work on Plant Bed—Dark Fire-Cured Tobacco.
(Average 2.71 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0	10	14.3	20	40	22	46.8	22	22.7	74	28.
.1—5	48	68.5	22	44	18	38.3	46	47.4	134	50.7
5.1—10	9	12.9	5	10	4	8.5	23	23.7	41	15.5
10.1 and over	3	4.3	3	6	3	6.4	6	6.2	15	5.8
	70	100	50	100	47	100	97	100	264	100

TABLE XXX.—Horse Work on Field Preparation—Dark Fire-Cured Tobacco.
(Average 32.44 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
5—15			1	2.0	2	4.2	1	1.	4	1.5
15.1—25	9	12.8	10	20.0	9	19.1	20	20.6	48	18.2
25.1—35	37	52.9	16	32.0	14	29.9	39	40.2	106	40.2
35.1—45	10	14.3	12	24.0	10	21.3	23	23.7	55	20.8
45.1—55	9	12.9	6	12.0	1	2.1	11	11.4	27	10.2
55.1 and over	5	7.1	5	10.0	11	23.4	3	3.1	24	9.1
	70	100	50	100	47	100	97	100	264	100

TABLE XXXI.—Horse Work on Transplanting—Dark Fire-Cured Tobacco.
(Average .83 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Farms of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0	46	65.7	39	78	35	74.5	95	98.	215	81.5
.1—5	22	31.4	8	16	7	14.9	1	1.	38	14.3
5.1 and over	2	2.9	3	6	5	10.6	1	1.	11	4.2
	70	100	50	100	47	100	97	100	264	100

TABLE XXXII.—Horse Work on Cultivation With Plow—Dark Fire-Cured Tobacco.
(Average 20.34 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
7.5—15	7	10.0	3	6.	3	6.4	37	38.1	50	19.0
15.1—22.5	30	42.9	26	52	24	51.0	32	33.0	112	42.4
22.6—30	21	30.0	13	26	11	23.4	17	17.5	62	23.5
30.1—37.5	9	12.9	8	16	7	14.9	8	8.3	32	12.1
37.6 and over	3	4.2			2	4.3	3	3.1	8	3.0
	70	100	50	100	47	100	97	100	264	100

TABLE XXXIII.—Horse Work on Cutting and Housing—Dark Fire-Cured Tobacco.
(Average 15.02 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—5	3	4.3	3	6.	2	4.3	2	2.1	10	3.8
5.1—10	21	30.0	16	32	9	19.1	15	15.5	61	23.1
10.1—15	22	31.4	13	26	16	34.	34	35.1	85	32.2
15.1—20	16	22.9	10	20	12	25.5	37	38.1	75	28.4
20.1—25	4	5.7	5	10	2	4.3	8	8.2	19	7.2
25.1 and over	4	5.7	3	6	6	12.8	1	1.	14	5.3
	70	100	50	100	47	100	97	100	264	100

TABLE XXXIV.—Horse Work on Curing—Dark Fire-Cured Tobacco.
(Average 6.42 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0—5	30	42.9	25	50	18	38.3	49	50.5	122	46.2
5.1—10	25	35.7	15	30	16	34.	32	33	88	33.3
10.1—15	11	15.7	5	10	7	14.9	9	9.3	32	12.2
15.1 and over	4	5.7	5	10	6	12.8	7	7.2	22	8.3
	70	100	50	100	47	100	97	100	264	100

TABLE XXXV.—Horse Work on Stripping—Dark Fire-Cured Tobacco.
(Average .06 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0			48	96	45	95.7	94	97	187	96.4
.1—5			2	4	2	4.3	2	2	6	3.1
5.1 and over							1	1	1	.5
			50	100	47	100	97	100	194	100

TABLE XXXVI.—Horse Work on Marketing—Dark Fire-Cured Tobacco.
(Average 6.48 hours per acre.)

Range in Hours Per Acre	Farms Using This Number Hours Per Acre									
	1919		1920		1921		1922		1919–1922 Inclusive	
	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms	No. of Farms	Per Ct. of Farms
0.—5			16	32	19	40.5	31	32.	66	34
5.1—10			28	56	23	48.9	59	60.8	110	56.7
10.1—15			4	8	3	6.4	6	6.2	13	6.7
15.1 and over			2	4	2	4.2	1	1.	5	2.6
			50	100	47	100	97	100	194	100